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Editorial Comment

THE INTRADERMAL TUBERCULIN TEST COMMENDED.

THE second annual tuberculosis conference of the United States Bureau of Animal Industry and the state live stock sanitary officials engaged in co-operative work for the control and eradication of tuberculosis in cattle and hogs, was held in Chicago, November 27th and 28th. It was attended by Dr. John R. Mohler, chief of the Bureau of Animal Industry; Dr. J. A. Kiernan, chief, and Dr. T. P. White, assistant chief of the Tuberculosis Eradication Division of the Bureau, and about twenty-five other representatives of the Bureau engaged in the co-operative tuberculosis work, by official representatives of the live stock sanitary control forces in forty-four states and something more than a hundred other veterinarians officially connected with this work or interested in it.

The conference brought out the fact that the tuberculosis free accredited herd work is making gratifying progress in forty-three states, there being on November 20, 1920, more than 4,000 herds already on the accredited list and more than 40,000 under supervision in the process of becoming accredited. Altogether, it is believed that the number of animals officially tuberculin tested during 1920 will exceed 1,000,000. Further, it was stated that the official tuberculosis control work had given a great impetus to private tuberculin testing by unofficial veterinarians, and thus the official testing does not represent all, or anywhere near all, that is being done to combat tuberculosis in cattle in this country.

The outstanding feature of the conference was the discussion of the comparative value of the various tuberculin tests. Heretofore, in the United States Live Stock Sanitary Association and last year at the Bureau of Animal Industry tuberculosis conference, the intradermal and ophthalmic tuberculin tests had but a few friends in the states east of Illinois. At the recent conference, a committee appointed to investigate the comparative value of the tests, recommended that they be placed on a par for use in the accredited herd testing. The committee recommended that herds with no history of tuberculosis be accredited with two annual or three semi-annual tests with any one or any combination of these tests. In a herd in which reactors had been found, the final test should be a combination of any two of these tests or of all of them.

A vote on adoption of this committee report was taken by states, the state veterinarian or live stock commissioner in each state casting the vote. The result was, thirty-six states voted for the adoption of the report, four opposed and four did not vote. This matter was later taken up in the meeting of the United States Live Stock Sanitary Association, and in a committee meeting representing the latter association, and the live stock breeders, and modified in such a way as to place the intradermal and subcutaneous tests on a par, but not to recognize the ophthalmic test used alone; and to provide that the final test for accredited herds having a history of tuberculosis be made by a combination of the subcutaneous and ophthalmic or the intradermal and ophthalmic tests or of all three of these tests. Minnesota, alone, of all the states, stood out against this recognition of the intradermal test.

History of Intradermal Test.

The history of the intradermal test in this country has been peculiar. About eight years ago, Dr. D. F. Luckey, state veterinarian of Missouri, began to advocate it as superior to the subcutaneous test, and since that time it has been used almost to the exclusion of other tests in Missouri, except for the official testing in accredited herd work, and for testing animals for shipment to states which require the subcutaneous test. The use of the test spread rapidly west and northwest and was so accurate, so inexpensively applied and so

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satisfactory in every way that it was soon used throughout the range states, and in California, where an extensive investigation of the comparative value of the various tests was made by the veterinarians connected with the state agricultural experiment station, it was emphatically approved.

In Illinois it came into considerable use, but farther east the intradermal test made no progress, and it was not until the past year when the demand from breeders for official testing for tuberculosis free accredited herds was so great as to far exceed the ability of the live stock sanitary authorities to keep up with the demand with the subcutaneous test, that any serious investigation of the virtues of the intradermal test was made in eastern states. During the past year, the intradermal test has been recognized for the first clear test for accredited herd work, and careful records have been kept by the Tuberculosis Eradication Division of the Bureau of Animal Industry of the results of the intradermal and subcutaneous test in forty-three states. These records covering the tests of a large number of animals, show conclusively that the intradermal test is just as reliable as the subcutaneous test, and there were many present at the Conference who believed that it was more reliable, owing to the fact that with the great amount of testing that has been done during recent year, many animals and many herds have acquired a certain amount of tolerance to tuberculin that interferes with the accuracy of the subcutaneous test.

Besides being equal in point of accuracy, more easily applied and far less expensive, the intradermal tuberculin test probably possesses another and very important advantage over the subcutaneous test, and that is its value as a combination test. In herds having a history of tuberculosis, practically all authorities have come to recognize the necessity for a combination test for cleaning the herd. It seems that the intradermal and the ophthalmic combination is more accurate than the subcutaneous and ophthalmic combination or the subcutaneous and intradermal combination.

Intradermal Possesses Great Advantages.

This journal early recognized the great practical advantages of the intradermal test over the subcutaneous test, and has constantly urged its adoption during the past seven or eight years. Had the action taken by the United States Live Stock Sanitary Association this year been taken when the co-operative work between the Federal Bureau and the state authorities was commenced three years ago, the limited funds appropriated for carrying on this work would perhaps have gone four or five times as far, and instead of there being 4,000 herds now on the accredited list, the number might have been nearer 20,000.

About six years ago, prediction was made in these pages, editorially, that the time would soon come when public officials would be guilty of a waste of public funds if appropriations were used for the subcutaneous test to the exclusion of the intradermal test. This view is now held by a large number, and seems in a fair way to be soon the unanimous opinion of those engaged in this work.

The desirability of having a uniform code for interpreting the intradermal test is apparent in view of the increasing use of this test. To meet this need, a committee was appointed in the United States Live Stock Sanitary Association to prepare such a code. The code prepared by this committee and later adopted by the association follows:

Code Adopted for Intradermic Tuberculin Test.

1. The committee recommends that the intradermic tuberculin test, when officially applied shall be observed as follows: If one observation is made, it shall be at the seventy-second hour after injection. If two observations are made, they shall be at the forty-eighth and ninety-sixth hours, respectively, after the injection. Under special conditions, more frequent observations over a more extended period of time are advisable.

2. An intradermic test shall be reported in accordance with the following code:

A. Animals showing no reaction shall be recorded at each observation as—N (negative).

B. Reactors shall be recorded as follows:

A. For circumscribed swellings, pea-size (diameter 3/16 inch) shall be used as the basic standard. Larger swellings shall be recorded as P 2, P 3, P 4, P 5, etc.

B. For diffused swellings, thick 2 X shall be used as the basic standard, and signifies a diffuse swelling in which the injected caudal fold is twice as thick as the normal fold. Larger swellings shall be recorded as Thick 3 X, Thick 4 X, etc.—D. M. C.

Parasitology Important to the Practitioner.

We are gratified to announce that beginning with this issue Veterinary Medicine will contain a department of parasitology regularly. In keeping with our policy to serve only the best to our readers the new department will be edited by a parasitologist of international reputation.

We take pleasure in introducing to the VETERINARY MEDICINE family Dr. Maurice C. Hall, of Washington, D. C. As an occasional contributor to our columns in the past, he is known to most of you. To any who may be unacquainted with Doctor Hall or his writings, we may say that his ability in his specialty is of the high order characteristic of all our department editors, that is to say, is unsurpassed, and he is in fitting company with Merillat, DeVine, Kinsley, Pammel, Eichhorn and Zell, unquestioned authorities in their respective lines.

Doctor Hall understands the subject of parasitology from every angle—he is familiar with the practitioner's particular, and often difficult, problems. In his department the subject will be dealt with from month to month in a simple, interesting and eminently practical manner.

That parasitology is of interest and of great importance is patent to every progressive up-to-date practitioner, and every veterinarian should attempt to place himself in this category.

Gradually but surely the subject of parasitology is demonstrating itself to be of equal importance to bacteriology, as shown by the discovery that various internal or external parasites are essential to the propagation of certain transmissible diseases, as the mosquito for the propagation of yellow fever, the tsetse fly, which transmits the trypanosomes by its bite (other flies also), the human body louse, that is the intermediary bearer of the germ of human typhus, the Trichina spiralis, which causes trichinosis, Strongyli, which cause verminous bronchitis of sheep, calves, swine, etc.; the Sclerostoma equinum or Strongylus armatus, the larvae of which causes aneurisms, or thrombosis of the mesenteric, colic, hepatic and other arteries, usually in colts, and causes the death of thousands of them by emaciation or colic, and many others, including the recent discovery that most cases of thumps in swine which heretofore was diagnosed as "mixed infection," is now known to be due to ascarid infestation of the lungs, that is, that the larval stage of the common round intestinal worm of swine is spent in the lungs, causing inflammatory conditions, the symptomatic manifestation of which is commonly called "thumps," and which causes the loss of thousands of dollars' worth of swine.

Armed with this knowledge, one autopsy of a pig from a "thumpy" lot of swine tells the story and enables the veterinarian by proper handling of the condition to save hundreds of dollars for the owner, to conserve the food value of the swine for the public and to enhance his own fortune and reputation. Many more examples of very great importance and value of a comprehensive knowledge of parasitology could be given, but we believe we have said enough to direct your careful attention to and study of Dr. Hall's articles as they will appear monthly in VETERINARY MEDICINE. —E. L. Q.

Goat Practice of Increasing Importance to Veterinarians.

Goats bring fancy prices; at last the goat is coming into his own. A two-year-old Angora billy goat was sold recently at San Angelo, Tex., for $1,750, the largest sum, so far as we are aware, ever paid for a goat in America. It was bred and raised in Oregon. The state of Texas is said to have 2,000,000 goats within its border, more than any other state.

Dr. G. P. Statter of Sioux City, Ia., tells us that his clients, DeHaan & Co., Leeds, Ia., importers and breeders of Toggenburg and Sannan goats, recently sold a buck kid for $750 and expressed it to California. Another one sold at $500 and was shipped to Illinois. This doubtless establishes the record price for kids. The same company imported about 125 goats last spring and is doing a thriving business supplying goats for breeding purposes.

One of the most thriving of the baby industries of the country, is the raising of goats for milk purposes.

Partly because of the goat's natural immunity to tuberculosis and partly due to the fact that they can be kept in such small quarters, compared to the needs of the cow; and city ordinances which prohibit the keeping of cattle within the city limits. Health departments of the larger cities are strenuously advising the inhabitants of their relative municipalities to purchase milch goats, especially where there are children. Many families are taking advantage of this advice, especially in the outlying parts of the cities and in the suburbs.

Aside from the above reason for the growth of the industry, there is the additional value of the goat in commercial industry, i. e., the use of the flesh for food and the skin for leather for making gloves, shoes, purses, book covers, etc.

Then there are also the Cashmere and Angora varieties of the goat which have long silky hair used in the manufacture of textile fabrics (mohair, etc.).

Goat practice adds one more avenue of service which may prove profitable to the veterinarian and as with poultry practice may and must of necessity be developed, and both the city and country practitioner should at once qualify for such practice by studying up on the subject. The industry of goat raising should be given every encouragement and no one is better able to further the work than the veterinary practitioner.—E. L. Q.

Antivivisection Act Defeated in California.

The initiative measure, formulated by the antivivisectionists, which was put to the ballot in California in November, was defeated, much to the credit of the intelligence of the California voters, who saw through the falsehoods and misrepresentations of the antivivisectionists and registered their disapproval of the measure to abolish animal experimentation.

For more than a score of years, such attempts have been made in the national Congress, Massachusetts, New York, Pennsylvania and elsewhere. In no instance have laws been enacted limiting the use of experimental methods in solving medical problems. There is universal recognition that this method is as necessary to solving problems of disease as is experimental work to solving electrical and chemical problems. There has been, likewise, universal appreciation of the great medical advances already made, and the certainty of many more to result from the use of this method.

The propaganda of the antivivisectionists rests on two assumptions—wanton cruelty in the treatment of laboratory animals, and utter uselessness of the results of animal experimentation, both of which have been disproved in every instance brought to the attention of the authorities. The humane rules drawn up by the Bureau for the Protection of Medical Research of the American Medical Association are posted in laboratories where such experimental work is carried on, and so far as we have been able to ascertain, are carefully adhered to.

In this connection it is of interest to note that support of the Myers bill prohibiting the vivisection of dogs in the District of Columbia and in all federal territory, was reaffirmed by the interstate conference of the anti-vivisection societies of the east at its semi-annual luncheon held in Washington, D. C., December 16.—M. E. B.

Dog undergoing a preliminary examination for hernia, in the dispensatory of the New York Woman's League in New York City. Pet animals are treated by this organization, free of charge to those unable to pay.

(Photo from Wide World Photos)

Influence of Feeding on Hog Cholera Breaks*

By DR. ROBERT JAY, Nashville, Tenn.

THE University of Tennessee, realizing the economic importance of losses due to breaks, conducted a preliminary experiment to determine the influence of feed as a predisposing factor in these breaks. Thirty-eight pigs were purchased. On October 29th two of these pigs were given virus alone as a check on the virus. Thirty-six pigs were vaccinated, each pig receiving 35 cc. of serum to 2 cc. of virus. The weight of these pigs varied from 40 to 100 pounds. The serum used in this experiment had been tested in the laboratory, and proved to be of high potency. Before this serum was used, 30 cc. were injected into a pure-bred Duroc-Jersey against 20 cc. of virus. The temperature of this pig was taken daily without an indication of reaction. This indicated that the serum used was potent and therefore should any break occur it could not be attributed to impotent serum. After treatment, these 36 pigs were divided into three lots of twelve each—lot No. 1 to be the control lot on two pounds of corn per 100 weight of pigs and on good pasture.

Lot No. 2 was immediately given access to a self-feeder of corn and culled potatoes which would represent a protein minimum ration.

Lot No. 3 was given access to tankage, shorts, corn in a self-feeder with buttermilk in slop twice daily. Lots 2 and 3 were confined in a small enclosure. At the end of six days the feed was taken from these hogs for the purpose of re-outlining the feeding process. They were put back on feed at the end of two days, when lot No. 1, which was the control lot, was subdivided into A and B. Lot A was put onto a self-feeder with tankage, shorts, corn and buttermilk in a trough, the same as lot 3. Lot B was put on a self-feeder containing corn and culled potatoes and allowed to feed at will. On the fifth day after the division of Lot 1, two of the pigs in Division A were noticed to have thumps, eyelids swollen and weeping, coughing and off feed, temperatures 104 and 105.2°. On about the fifteenth day after vaccination, word was received at the office that these two pigs were seriously sick with scours, high temperatures, off feed gaunt eyes gummed up. On Nov. 18th, pig No. 14 in A division of Lot No. 1 was found with the above symptoms, a temperature of 102°, staggering and evidence of collapse. A postmortem was held in which numerous well-marked petechiae were found on the mucosa of the bladder, well-marked petechiae on kidneys, spleen, larynx, and numerous petechiae throughout the mucosa of the colon. The ridge of lungs was studded with large blood extravasations with areas of red hepatization in substance; the lymph-glands were enormously enlarged with some peripheral hemorrhages, especially marked in the submaxillary and mesenteric.

Pig No. 15 was also showing the same symptoms as pig No. 14, but was stronger and able to get around the enclosure. Two others were breathing jerkily but were still on feed. The other two were apparently well. All of the pigs in Lot No. 2 on the corn and potatoes diet, as well as two shoats, a sow and ten suckling pigs which were treated at the same time on the farm, but were not in the experiment, never showed any symptoms of being off in any way; temperatures normal, animals with every appearance of health. One pig in Lot No. 3 developed thumps; the others were apparently well. Last Friday, Nov. 26th, we received word that two more of the protein diet pigs were sick, showing similar symptoms.

Break Due to Lack ot Exercise and High Protein Diet.

We have in this experiment produced a break in hogs vaccinated by serum of unquestionable potency and virus of proven virulence. There can be no question about this break being induced by the diet. However, as Prof. Wilson says, "This is a preliminary experiment to indicate the need of further experimental work to determine this question of the influence of diet in inducing these breaks in immunity."

While the experiment indicates that protein intoxication is a factor in withholding the protection of serum injected with virus, experiments will be needed to show that anti-bodies elaborated in active immunity can be held in abeyance during an anaphylactic period, the hog become infected, and after this condition has passed, regain immunity. Let me cite a

*Read before the meeting of the U. S. Livestock Sanitary Association, Chicago, Nov.-Dec., 1920.

history of a herd which would give credence to such a possibility.

A serum producer bought about 185 immune hogs from a feeder. They were shipped to the plant and placed in the pens with some 300 or 400 immune hogs which had also been purchased for hypering purposes. These 185 hogs had been treated by the double method, turned into a field, and from time to time infected hogs were vaccinated and turned into the field with these hogs, which would tend to prove their immunity. After these hogs arrived at the serum plant they had access to a self-feeder of tankage and commercial feeds, in pens which were crowded and where the hogs could take their fill and lie around. They were under this system of management almost four weeks, when some of the hogs developed thumps, harsh cough, lying on breast, rise of temperature, etc. The condition developed rapidly in most of the 185 hogs, while the hogs in adjoining pens remained free from any indication of sickness. One hog was lost, some thirty were unthrifty for about a month, the rest apparently recovered in a few days, the temperature dropped to normal, came back on feed, breathing naturally. In two weeks these apparently well hogs were hypered, with the result that 50 percent were lost with symptoms and postmortem lesions of cholera. The temperature reaction to the injection of virus appeared on the fourth day in most of these hogs. The 30 unthrifty hogs were hypered at the end of the month without re-vaccination and responded without loss. About 100 hogs were purchased from the same lot later on, and were hypered with good results. It is quite evident then that a state of anaphylaxis was induced by the lack of exercise and high protein feed, manifested by symptoms we ascribe to swine plague and that this anaphylaxis was responsible for the non-protection of these hogs from the virus of hog cholera after immunity was established, and this is supported by the fact that they had been in contact with cholera hogs before this condition was induced without developing the cholera.

The writer is of the opinion that the cause of these breaks will have to be determined by feeding experiments in vaccinated hogs and through the close co-operation of the physiological chemists in determining the progressive changes taking place in the blood and tissues of the hog during this condition of anaphylaxis, rather than the hope of isolation and identification of bacteria associated with the virus of hog cholera. These observations and experiments point to the possibility of a solution of the cause of breaks with definite means of prevention and justifies more experimental research in reference to the influence of diet and lack of exercise as causes of anaphylaxis and breaks. Serum companies also should be active in removing the imputation that they are distributing serum of low potency and, in instances, non-virulent virus.

Potassium Iodide in Congenial Goiter

By H. WELCH, Bozeman, Mont.
Veterinary Dept., Montana Experiment Station

SINCE the demonstration of the value of potassium iodide as a preventive of congenital goiter by the Montana Experiment Station in 1916, the use of this agent has become more widespread throughout the Northwest year by year. The annual loss of stock from hairless pigs, goitered and hairless lambs, calves and foals, has never been approximately estimated, but it was known that the trouble constituted a serious handicap to the stock-raising industry. Correspondence on the use of potassium iodide indicates that large areas in North and South Dakota, smaller areas in Wyoming, Washington and Idaho, practically all of southern Alberta and British Columbia, were seriously affected. In Montana the areas were definitely mapped and include the entire drainage basin of the Yellowstone and the lower basin of the Missouri. In these areas, today, the use of potassium iodide is as universal as the use of blackleg vaccine. Correspondence with stockmen here and there in Minnesota and Wisconsin and in other eastern states show that the trouble is by no means confined to the northwest states.

Most of the stockmen in the above districts still use the somewhat empirical method first suggested by us: one grain of potassium iodide daily for the first three months of the gestation period, for sows and ewes, and for six or seven months for cows and mares. For administration to sows, the one-grain pressed tablet has been universally adopted, using the bulk form mixed with stock salt for sheep or cattle on range.

Experiments on a small scale indicated that even one grain a day is in excess of the amount actually required and that the administration of iodin during a much shorter part of the pregnancy would be as effective, increasing the iodin content of the maternal thyroid to a point where iodin starvation of the fetal thyroid would not occur. Suggestions to stockmen that the amount of iodin be decreased, have not been welcomed, as the expense of the iodin treatment is of little consequence, except when large numbers of animals are being fed, and they are satisfied with the results obtained with the one grain a day dosage.

Potassium Iodid Used.

The total amount of potassium iodid now being used must be very large, as the correspondence during 1919 at this Station alone would total about 300,000 head of stock that were to have been fed iodin during the winter. We have not attempted to keep in touch with these men, or to tabulate results, as the first two years showed that there was 100 per cent preventive value in cases where the feeding period period extended over sixty days of the pregnacy.

It seems very probable that the use of potassium iodide for this purpose is to be a permanent thing. No doubt, further investigation of the cause of goiter will devise a method of prevention by some material change of diet or management, but it is likely that any such method will involve greater expense and labor than the iodin feeding.

Observation of the occurrence of goiter in animals tends to indicate that throughout the entire eastern slope of the Rocky Mountains there is a varying degree of interference with iodin assimilation by the thyroid. The addition of a small amount of iodin to the ration, even in localities where goiter was not a factor, has tended to increase the iodin content of the thyroid of the young with increased vigor and rate of development.

So many factors enter into the question that a great deal of experimental feeding will have to be done to establish the minimum iodin content of the thyroid of the mother for the production of normal young, but when this point is established it will be possible to intelligently supply iodin and obtain absolute freedom from congenital goiter in any degree.

Hart and Steenbock, of Wisconsin, in September, 1918, and Kalkus, of Washington, in 1920, have published reports on the use of potassium iodide in goiter, confirming our results in every detail. Their publications, together with articles in newspapers and farm periodicals, should eventually get the information to all stockmen in goitrous districts, and render the loss of animal from goiter as unnecessary as the loss of a calf from blackleg.

Mineral Requirements in Animal Foods

By DR. A. T. PETERS, Chief Veterinarian, Springfield, Ill.

THE need of animals for mineral matter is more urgent than the average person suspects, who has not had sufficient experience to note the value that can be derived by the addition to the ordinary ration, of minerals.

My attention was first attracted to the value of minerals when conducting a large feeding plant for hogs. These animals were kept in confinement from the time they arrived at the feeding plant until ready to be shipped to the market, and it was found that in order to keep these animals in a thrifty condition and to avoid the leaching of the phosphate content of the body, it was absolutely necessary that mineral feeds be added to their ration, and it may be surprising to those who have not kept an accurate account of the amount of minerals needed, that the average hog required four pounds of mineral a week.

It was noticed that when these animals were not supplied, that such disorders as paralysis of the hind limb were noticed; also that the slipping of the animal on the cement floor caused numerous fractures. As soon as the minerals were supplied, this trouble would cease.

It was also observed that many animals would be affected spontaneously with what was commonly called by the attendant, St. Vitus dance. This would, also, be speedily corrected when minerals were supplied to the amount as stated above, and in order to avoid any of these losses, we supplied this mineral to the animals in self-feeders where they had access to it at all times.

This experience has induced me to use minerals in cattle practice for the last twelve or more years. It is one of the best adjuncts to increase the milk ration and to keep the milk flow constant without much fluctuation. I realized that the milk contained a large per

cent of mineral and that by supplying the minerals to the cow, the equilibrium was maintained. This was especially noticeable in cattle that were trying to compete for a record. Wherever the minerals were supplied, the average milk production was maintained normally. Not only did I use minerals to a great advantage for the production of milk but for the building up of animals that had aborted, with most gratifying results.

In these herds where abortion appeared, they were placed on this mineral feed, giving an extra dose of mineral feed at least twice a day and it was observed that it took about twelve weeks to bring about the mineral equilibrium in the body of the animal. When this mineral equilibrium had been established, these animals did not abort; and strange to say, where this feed was used very few animals became sterile, and where it was used continuously no more trouble was experienced.

This same mineral feed is indicated in the production of eggs and also in preventing disease in poultry which is called among chicken fanciers, "going light." In many flocks where this mineral has been fed, even to chickens affected with this trouble in the earlier stages, they soon made a speedy recovery.

I have induced many veterinarians to use this mineral in horses that were convalescing from an attack of influenza, pneumonia or emaciation. In fact it is indicated in every case where the animal shows debility, and it is surprising how soon these animals showed symptoms of recovery.

I have prescribed it in every case where animals seem to be suffering from some form of malnutrition, especially in cases where the animals show that they have not shed their coat of hair properly. When these animals are placed on the ration of minerals, it is surprising with what rapidity they show improvement.

I may be termed a fanatic on the use of minerals but I, also, believe they are indicated in every case of surgery or open wounds; given internally they assist in increasing the opsonic index of the body and thereby aid recovery of the affected parts.

Phosphorus, calcium, magnesium, ground bone, together with sulphur and iron were the basis of our minerals used.

I am a firm believer in the use of these minerals and feel sure that they will be largely used by every veterinarian who will give them an impartial trial.

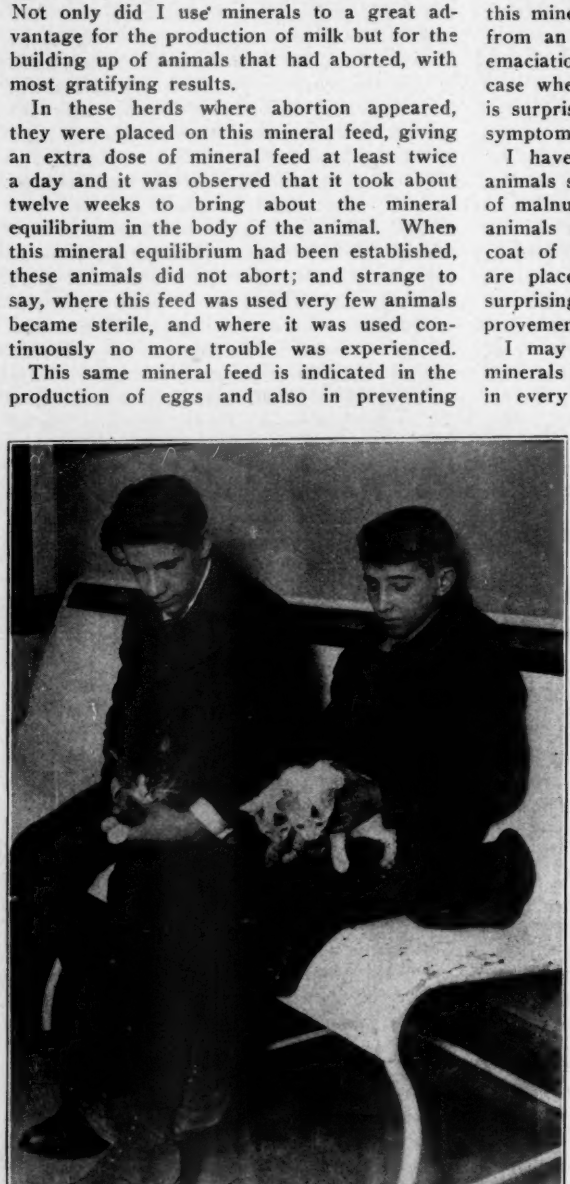

Photo from Wide World Photos.

Two sad-eyed youths, who have brought their pets to the dispensatory of the N. Y. Women's League for Animals. The cat, held by the boy on the left, was run over by a street car and had a piece of its tail cut off. The other two kittens were brought to be destroyed, being the two unlucky ones selected for the death chamber, from a family too large to be accommodated in the boy's home.

The Dissemination of Anthrax Infection Through Industrial Sources

By DR. A. EICHHORN, Pearl River, N. Y., and DR. A. L. EDMUNDS, Franklin, N. H.

THE handling of anthrax hides in tanneries has been recognized as a source of danger to the employes coming in contact with them, and statistical data available prove that a large proportion of the anthrax cases in human beings develop among tannery workers and among laborers employed in loading and unloading hides. Thus from 1900 to 1911 in Germany the number of cases among tannery employes varied from twenty to fifty annually.

The necessity of large importations of foreign hides to the United States from China and India, especially due to the shortage of native hides during the war period, resulted in a pronounced increase of anthrax infections in human beings and also in the occurrence of anthrax infections in animals kept in districts where tanneries were obliged to resort to the importation of hides.

The fact that the danger from native hides may be considered negligible may be explained, in that, on the North American continent, as well as in most of the European countries, sanitary measures employed for the control of anthrax infections prevent, in most instances, the skinning of anthrax carcasses, thereby eliminating danger from such sources. Such is not the case in the Asiatic countries, and the experimental work conducted in this country as well as in Europe with hides from those sources have conclusively established the fact that the occurrence of anthrax in imported hides is very common.

In two instances the senior writer had occasion to demonstrate this fact in connection with his investigations on the occurrence of anthrax infections in tanneries handling imported hides.

Veterinary sanitarians are primarily interested in the dissemination of anthrax from the tanneries through the drainage water, inasmuch as it is a practice to establish tanneries in localities where the drainage water may be readily emptied into smaller or larger streams. Such practice naturally results in the pollution of the streams into which the drainage water from the tannery flows, and if cattle have access to such polluted streams, or, on the other hand, if the topography of the land around the stream is such that it is subject to inundation, the infection is disseminated upon the adjacent land. In this manner permanently infected anthrax districts have been established in the United States and Canada, primarily, the result being that some tanneries which heretofore handled only native hides have in the past few years resorted to importation of hides.

The control exercised by the federal authorities on the importation of hides is not at the present time effective in eliminating anthrax infection. The requirements of certification at the point of shipment before a United States consular officer, that the hides constituting the shipment are not from animals affected with anthrax, does not afford a sufficient guarantee for the elimination of the infection. Likewise, the dipping at such points without proper supervision could not be made effective. In view of these conditions the control of the infection from such sources becomes a problem for the health and sanitary authorities in this country. Up to date, tannery owners were required to satisfy only the Board of Health authorities as far as safeguarding the health of the employes is concerned; whereas the live stock authorities are entirely disregarded on the problems which arise from the handling of anthrax infected hides in tanneries.

Tanneries Should Be Controlled by Sanitary Laws.

Repeated dissemination of anthrax infections from tanneries, and thereby the creation of anthrax localities, points out the necessity of inaugurating a proper and effective control for such establishments, and therefore the live stock sanitary laws in states where tanneries exist should include such measures as will place tanneries under their supervision, giving the live stock authorities such powers as will safeguard the live stock and agricultural interests in such communities against the possibility of infection. It is true that we have many instances in which tanneries handling infected hides are not responsible in causing outbreaks of anthrax in animals, but it has been established that in such instances the failure to spread the disease from these sources is due either to the fact that the tannery is so located that there are no pastures in the

locality surrounding the polluted streams, or that the drainage water empties into a large stream in which it immediately becomes very much diluted; or that the drainage water passes into a stream having an extremely slow flow, so that the maximum of the solid material settles to the bottom and cattle have no access to the streams in which the tannery drainage flows and finally in case the tanneries do not handle hides from districts in which anthrax prevails. In all these enumerated instances the danger of the dissemition of the disease, while not always entirely eliminated, is reduced to a minimum by the natural environments.

On the other hand, in other instances, under more favorable conditions, the anthrax infection is disseminated from the tanneries infecting the adjacent locality, thereby causing periodical outbreaks of the disease. It must be recognized that hides from anthrax carcasses harbor a tremendous number of spores due to the fact that the viability of these spores extends over many years, the sterilization of the hides and the drainage water constitutes a rather difficult problem. Contamination of the hides with ordinary pathogenic germs, especially those which are not spore-bearing, can be eliminated much more readily than the resistant anthrax spores. Investigators who have conducted experimental work along this line have long realized the difficulties confronting them in safely eliminating anthrax infection from hides, and while methods have been developed by which this may be safely accomplished, the procedure involved was such that the tanneries were not willing to adopt them, inasmuch as the tanneries claim that the value of the leather suffers as a result of the application of these methods. In the face of experimental work, however, it is evident that their contention is not well founded.

Sterilization of Hides Effective.

The Seymour-Jones method and the Schattenfroh method have, according to many investigators, both proved effective, and according to the investigations of Tilley of the Bureau of Animal Industry, the sterilization of the hides by these methods may be successfully accomplished without any injury to the hides. By both of the methods mentioned the destruction of the infection is accomplished by chemical means, the hides being subject to disinfection during the soaking process. The methods are described in detail in the original articles of these investigators or in the publication by F. W. Tilley on "A Bacteriological Study of Methods for the Disinfection of Hides Infected with Anthrax Spores." By subjecting the hides to any of these processes the anthrax infection can be eliminated or at least controlled; that is, if some of the spores should survive the process of disinfection, they would become attenuated to such an extent that they would no longer possess disease-producing qualities. The disinfecting of the hides through chemical action, therefore, can be accomplished in tanneries, provided this is satisfactorily carried out. This has been further established in the control of the infection in the Whitefield, N. H., district, which will be described later.

The possibility of the elimination of the infection by physical methods has also been considered in many of the investigations. The fact that in the various processes employed in the tanneries preparatory to the tanning of hides, especially in the soaking and fleshing, the largest proportion of the infection is eliminated, and that in these processes a great amount of infection passes into the drainage water, suggested the possibility that the infection might be eliminated from the drainage water by suitable procedures. The chlorinization of the water has given the best results, but would represent such a costly method that from a practical point of view it cannot be considered. On the other hand, the fact that the great proportion of the infection is carried into the drainage water by solid particles, especially the fleshings, the installation of devices whereby the solid material may be removed would naturally tend to reduce the pollution of the water to a minimum.

With this in view, many of the tanneries in the United States, and especially so in Europe, either voluntarily or through authoritative compulsion, installed sedimentation tanks and also various kinds of screens for the purpose of eliminating the solid material from the drainage water. In some instances revolving screens have also been installed for the exclusion of the solid material. Likewise, in connection with the sedimentation tanks the water flowing from them is directed into filter beds, which accomplish the final elimination not only of the solid material contained therein, but also tend to retain most of the microorganisms from the drainage water. Several of the tanneries in Pennsylvania are equipped with sedimentation tanks of this kind, and unquestionably, if they are properly cared for and the filter beds are also kept in good condition, the pollution of the streams from the tanneries may be successfully prevented.

Thorough Supervision Necessary.

It is of paramount importance that where any of these systems or a combination of these systems are established, the greatest care must be

exercised to supervise their proper operation. It is essential that a series of sedimentation tanks must be provided, the number depending on the amount of water used in the tannery. There should be only one outlet from the tannery for all the water used, which should be permitted to flow into the sedimentation tanks. From the last tank the water should be directed into well constructed filter beds, and these also must be cleansed from time to time of any refuse which may impair their proper functioning.

In some instances the senior writer had occasion to observe the unsatisfactory functioning of the sedimentation tanks from inattention, and he succeeded in demonstrating, without the slightest difficulty, anthrax organisms in the slimy material collected along the canal carrying the water from the tannery into the river. In this particular instance, however, on inquiry it was found that no attention whatever was paid to the sedimentation tanks, which, of course, under such conditions could not perform the function for which they were intended.

The fact that by far the largest amount of anthrax infection from hides is contained in the solid particles, and that they may be eliminated by devices, would tend to minimize the danger of the infection, if nothing more; but such means are used to guard against the pollution of the streams by tanneries; at least, the infection would hardly exceed proportions whereby it would be capable of infecting animals which are being periodically vaccinated against anthrax. However, in such instances it would be essential to vaccinate all the stock exposed to such polluted water or pastures upon land inundated by the water; whereas, in the absence of such precautions, even the ordinary vaccination would not entirely prevent losses, as the animals would be subject from time to time to such extraordinarily heavy exposure that the immunity conferred upon them would not be sufficient to protect them against the infection.

The junior writer had the opportunity in his experimental work along this line to prove this point, and from personal observations and also from authentic statements of owners of the land along a polluted river in the Whitefield, N. H., district it was found that after the recession of the water following an inundation, pieces of hides, tremendous quantities of fleshings, etc., were found upon the land several miles from the tannery. These various materials no doubt in some cases contain anthrax spores in such quantities that ordinary vaccination would prove ineffective in preventing the development of the disease.

It may be readily seen, therefore, that in order to safeguard the live stock in such localities it is essential that the methods adopted for the protection of the locality from the drainage water must be carried out painstakingly, and that any neglect or disregard may be followed by serious results. Once the infection is established on the land, even if proper precautionary measures are taken toward eliminating the infection, the animals must be vaccinated for many years to come in order to prevent any losses from the disease. Such land must naturally be considered as permanently infected, and only by persistent vaccination, and thereby prevention of all reinfections, will it be possible to make such land safe.

Continued inattention toward the prevention of constant infection of the land from tanneries would not only result in a persistent infection, but would also tend to increase the infected area, as the infection may be carried from such sources to adjoining territories, continuously enlarging its extent. This was also observed in the Whitefield, N. H., district in 1919 when the disease spread from the meadow lands upon the farms along the hillsides, in some instances several miles distant from the meadow land. It is not necessary to dwell upon the many channels whereby the infection may be spread from localities to more distant points, if we now only consider the established fact that flies, birds, dogs, etc., may disseminate the infection from one place to the other.

From the numerous instances in which anthrax has been disseminated by tanneries, it is of the utmost importance that the live stock sanitary authorities should be empowered to require owners of tanneries to adopt such precautions as to prevent the dissemination of anthrax. Only by so doing will it be possible to safeguard the live stock from any danger emanating from polluted tannery drainage. If such power had been given to the live stock sanitary authorities many outbreaks could have been prevented in the United States and live stock owners would have been spared great losses and the permanent danger which prevails in such districts.

The Whitefield, New Hampshire, Case.

The contamination of the land adjacent to the Johns river, New Hampshire, from the drainage water from a tannery at Whitefield, N. H., so far as can be ascertained, was free from anthrax until 1915. In June of that year several reports of deaths of cattle were received from the towns of Whitefield and Dalton by the Commissioner of

Agriculture. Investigations revealed anthrax infection, and after removing the cattle from the infected pastures no further cases appeared until the following winter, when several animals died from the disease, which was definitely diagnosed as anthrax. It was further established that the deaths resulted from feeding hay cut from the meadow lands bordering the Johns river. The Chief of the Bureau of Animal Industry of Washington, D. C., was informed of the occurrence of anthrax in that district, and a bacteriologist from the Pathological Division was assigned to proceed to New Hampshire to assist in the investigations for the purpose of preventing further dissemination and losses from the disease.

Specimens of hay cut from the infected meadow land have definitely proved that the pasture was contaminated with anthrax infection.

It was further established that the occurrence of the disease was due to the contamination of the Johns river with drainage water from the tannery located in the town of Whitefield. This tannery up to 1915 principally used native hides for tanning purposes. Due to the shortage of hides at that time, importations were made from various parts of the world, many of the shipments originating in China. In the course of the investigations by the State Department of Agriculture, the presence of anthrax infection in the water in which the hides were soaked was discovered. Consequently, the infection must have persisted in different parts of the tanneries in which the hides were handled, such as in the hide room, soaks, fleshings, etc. All the drainage water from the tannery empties into the Johns river, which is located approximately about fifty yards from the tannery soaks. From that point the Johns river is somewhat winding in its course and empties into the Connecticut river about six miles from the tannery. The flow at some points is slow; at others, more rapid, and it is bordered on both of its banks by rich meadow lands. The meadow lands, again, adjoin farms, most of which are located on slightly sloping and rolling hillsides. The Johns river overflows the meadow lands in the spring and also during the season of torrential rainstorms.

As soon as the presence of the infection was established, the hay originating from the meadow land was ordered burned under official supervision. The animals in that locality were vaccinated by veterinarians in the state service. The premises where the disease occurred were thoroughly cleaned and disinfected. Instructions were issued by the authorities on the disposition of carcasses which died from anthrax, and such sanitary measures were inaugurated as would prevent the spread of the disease.

In order to prevent the continuous recontamination of the land, and also on account of the possibility of spreading the infection from the Johns river into the Connecticut river and thence upon the land adjoining the river, it was deemed advisable to require that the hides in the tannery be soaked in a suitable disinfectant. The tannery officials agreed upon such a procedure and soaking of the hides in a bichloride of mercury solution was decided upon. Pasturing of animals on meadow lands was prohibited.

In order to establish whether vaccinated animals might be safely placed upon the pastured land, especially so since reinfection of this land was guarded against by the soaking of the hides in the bichloride of mercury solution in 1917, the department decided to carry on experiments to determine whether the animals might be safely pastured upon the land and also whether the hay, after being cut and placed in the barns for winter use, could be fed to the animals.

Precautionary Measures.

The following precautions were taken prior to the attempt of the experiments:

1. It was required that the tannery at Whitefield soak the hides in bichloride of mercury solution of 1 to 1000 for 24 hours, which is known to destroy or at least greatly attenuate the anthrax spores in infected hides.

2. The meadow lands along the Johns river were burned over, covering a territory varying from a few rods to half a mile in width, and from three to four miles in length. Some of this land was burned over twice, while all of it was burned over once. This precaution was taken in order to destroy the anthrax spores present on the surface.

3. Thorough cleaning and disinfection of all premises where cases of anthrax were known to exist, and the proper disposition of all carcasses of animals which died of anthrax.

4. Vaccination of all cattle in the entire area.

The vaccination of 1917 consisted in the administration of either the simultaneous treatment or the double vaccination with No. 1 and No. 2 vaccines.

All the animals were held in the barn for about ten days, when they were turned onto the infected land.

In this experimental work, cooperation of the land owners with the department was solicited and an agreement entered into which resulted in the vaccination of about twenty animals. A few days after the placing of the animals upon

the pasture, one animal died, and the farmers, without consulting the veterinarian in charge, removed the other animals from the meadows, which automatically terminated this experiment.

In the spring of 1918 it was decided to again try the experiment, but in a somewhat different manner. The farmers agreed to furnish the cattle for this work, the Department of Agriculture taking full charge of them, and no animal was to be removed from the meadows during the term of the experiment except by order of the department. To insure the farmers against financial loss, it was agreed that any animals dying, either as a result of vaccination or from direct infection, should be paid for by the department from the funds appropriated for this purpose, the full appraised value of such animals being allowed.

Instead of placing the cattle on small enclosed plots, as was done in the first experiment, they were given free range over most of the quarantined area.

In some farms the cattle did not necessarily drink the contaminated water from the river, as there were brooks coming from the highlands to which they had access. It was noted, however, that they did occasionally drink from the river.

This river water has been found to carry heavy solutions of antiseptics used by the tannery company in the process of tanning hides. Not only that, but many thousands of hides imported from China, and known to be infected with anthrax, had been washed or soaked in water which was allowed to run into the river from the soaking vats.

It has been stated that in the experiment of 1917 one animal died, which clearly proved that the process of vaccination used did not in all cases protect the cattle from this disease. In 1918 a different procedure was therefore carried out. Forty-four animals were used in this experiment, each of them being ear-tagged, and records made of estimated weight, ages, previous history and appraised value.

The process of immunization was then begun. Each animal first received 10 cc. of serum and 1 cc. of vaccine No. 1. Ten days later they were given a dose of vaccine No. 2, and again ten days later, a special vaccine, somewhat stronger than the No. 2 was administered. The animals were retained in the barns for ten days after the last vaccination, when they were turned onto the meadows.

During the latter part of the summer a registered bull was added to the experimental herd. He was vaccinated by the procedure described above and after remaining on the infected meadows for several weeks, showed no ill effects from the exposure.

The department, wishing to carry the experiment still farther gave its consent to the cutting of some of the hay for barn feeding. About forty tons of this hay was placed in special barns and was fed under special permit to animals that were pastured on infected areas. No further vaccination was deemed necessary. Twenty other animals which have not been on the meadows, but were vaccinated as described above, were also used in this feeding experiment. No bad results following the feeding of the hay.

These experiments having proven that animals may be successfully vaccinated against the existing infection, some farmers requested the Commissioner of Agriculture that they wished to pasture animals upon the meadows; others desired to cut the hay and feed it to vaccinated animals. The animals were vaccinated and some of them after complete vaccination were placed upon the infected land. In about four weeks, anthrax was reported to have occurred in two of the animals on pasture, with typical manifestations of the disease.

Recurrence Due to Disregarded Instructions.

In the face of the favorable results and the control of the disease in 1917 and 18, losses from anthrax came as a surprise, and investigations were immediately undertaken to establish whether the soaking of the hides in the bichloride of mercury solution was consistently carried out. These investigations revealed that the instructions were entirely disregarded; that the bichloride, if such had been used, was not used in a sufficient strength to insure the destruction or even an attenuation of the spores. This fact would explain the recurrence of the disease among the animals.

It must be considered remarkable that in spite of vaccination of the animals even with the special vaccine, it was not sufficient to prevent the disease. This may be explained that the tannery imports practically all of its hides and the infection must have been very heavy. Thus the animals drinking the water from the contaminated stream have taken in such a large amount of spores that the immunity produced by the vaccination was not sufficient to prevent the disease.

As a matter of fact observations by the authors conducted along the river have shown that tremendous amounts of fleshings and other solid materials were carried by flies and possibly other means. In all a total of six cattle

and twelve horses died. A large proportion of the affected animals recovered after the liberal use of anti-anthrax serum. The failure to conscientiously carry out the dipping of the hides as agreed upon, no doubt was responsible for the 1919 outbreak, and the observations in the past three years warrant the conclusion that unless precautions are taken by the owners of the tannery, as outlined by the state authorities, the use of the meadow lands along the Johns river could not be safely utilized for pasturing or hay production.

In view of the fact that the dipping requirements as to the hides can be controlled effectively only by strict supervision, the installation of revolving screens and settling tanks would afford the best solution for controlling the infection. At least the ordinary form of vaccination in such cases would prevent losses and thereby the spread of the disease.

It is contemplated to equip the plants with such means as would effectively take care of the solid material emitted from the tannery, and it is thought by persistent vaccination the disease may be effectively controlled and the extension of the anthrax district prevented.

Conclusions.

1. The drainage water from tanneries handling foreign hides constitutes a source of danger for polluting streams with anthrax infection. In at least two instances in the past five years have new anthrax districts been created by such tanneries in the United States and Canada.

2. Either Federal or State authorities should be empowered to compel tannery owners to adopt such means as would prevent the contamination of streams with anthrax infection. The soaking of the hides by either the Seymour Jones or Schattenfroh methods will effectively control the anthrax infection in hides. These methods, however, are effective only if consistently carried out.

3. If the soaking in disinfectants is not practiced, the elimination of the solid matters from the drainage water should be insisted upon. This may be accomplished by the installation of revolving screens and settling tanks.

4. The effective operation of the screen and settling tanks should be periodically controlled.

5. Where no precautions are taken to guard against continuous pollution of the drainage water, and where animals have access to the stream in which such drainage water flows, they should be vaccinated, not only in the routine manner, but they should also be periodically revaccinated in order to confer upon them the maximum of immunity.

6. Even if the necessary precautions are taken by the tanneries, the animals would have access to the land previously known to have been infected by tanneries, should be regularly vaccinated. If anthrax should develop in such districts, the outbreaks should be controlled by the usual approved sanitary measures.

The writers desire to express their hearty appreciation to Andrew L. Felker, Commissioner of Agriculture, and Dr. Charles Duncan, Secretary of the State Board of Health of New Hampshire, for their valuable assistance rendered in connection with these investigations.

Report on Loin-and-Back Disease.

Dr. J. M. Buck, of the Bureau of Animal Husbandry, has returned to Washington, D. C., from Texas where he went to make an investigation of the loin-and-back disease among cattle about which complaints have been made. Although the season of his visit was one at which cases of the malady were difficult of access, he succeeded in getting two autopsies, but discovered little beyond an inflammatory condition of the intestines, to suggest the cause of death. He made no bacteriological examination because the Agricultural College of Texas in a number of examinations, had found no evidence that the disease was infectious. He did, however, send samples of blood serum to Washington, where the research laboratory under Dr. J. M. Buckley, made tests to ascertain if it was a trypanosoma disease but the cultures showed negative.

The disease seems to be prevalent more or less generally through the low country of Texas but disappears when the highlands are reached. No history of it has been obtained further back than fifteen years. This throws some doubt on the supposition that it may be traced to the coffee berry plant which is found about practically all the water-holes in this section, and the seeds and leaves of which are definitely known to be poisonous. It has not been ascertained that the cattle eat either the leaves or the berries. During the coming season examinations will be made to ascertain whether the disease is unusually prevalent at the season when the seeds or leaves fall off into the water, in which case the malady might be caused by drinking an infusion of the poison.

The disease sometimes kills in twenty-four hours, but some animals, after having it for a month, have recovered.

Parasitology

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THE VETERINARIAN AND ZOOLOGICAL NOMENCLATURE.

ZOOLOGICAL nomenclature is not a topic of which the veterinarian is fond, and the selection of a distasteful topic requires some explanation. The explanation is that it is this distasteful topic which is largely responsible for the American veterinarian's regrettable lack of information in regard to parasitology. It is probably this phase of parasitology which is most apt to "bluff" the veterinarian as a student and lead him to regard parasitology as a difficult subject. The graduate veterinarian finds zoological nomenclature vexatious, partly because the names he learned as a student are apt to drop out of the literature, for no reason of which he is aware, and be supplanted by new and strange names that mean nothing to him. He does not know the reason for the change and has probably never been given any reason as to why parasitologists insist on attaching a long two-part Latin name to an animal when they might have used a single, short common name. This topic is commonly given very little attention in the teaching of zoology and parasitology—and not alone in the case of veterinary students. It seems evident that this failure to supply the student with a reason for the existence of a practice predisposes him to doubt whether there is any reason, with the result that many veterinarians regard scientific nomenclature as a species of academic nonsense, and changes in nomenclature as willful, perverse and unnecessary alterations in well established and quite satisfactory names. If this did not result in a distaste for and a dislike of the important topic of parasitology, it would be a matter of little interest or importance. To the extent that it does bear on the veterinarian's interest in this topic, it is a matter of interest. While the subject of zoological nomenclature has some complications, requiring experts to solve, the International Committee on Nomenclature being a body of such exports, it is in the main a simple matter, and this paper is an attempt to present some phases of the matter in simple form.

Reason for Scientific Nomenclature.

Why do we have scientific names anyway? In order that a definite name may attach to a definite kind of animal, regardless of the influence of geography and language. The so-called common names do not have such definiteness. The word *horse* is a fairly definite word, but it is only good currency where the English language is spoken. The same animal becomes *cheval* in France and *Pferd* in Germany, and numerous other things elsewhere. But it is *Equus caballus* in all countries and all languages to scientific men. Even in languages such as the Japanese, in which the characters used in printing are entirely strange and unintelligible to an American, the scientific names may be picked out, since zoologists in all countries conform, in the main, to the zoological code.

When we pass from the word *horse* to the word *cattle,* the case is even worse. Not only does this word change in languages other than English, but it has too many meanings in the English language. It still carries its old meaning of live stock in general. To make matters worse, it means entirely different species of the cow family, Bovidae, in different countries where the English language is spoken, so much so that to report a tick from *cattle* may leave one entirely in doubt as to the host animal referred to. In India, for instance, *cattle* as generally used will refer to Indian cattle, *Bos indicus.* In the Philippines, may refer to the water buffalo, *Bos bubalis.* In the United States, *cattle* usually refers to *Bos taurus.* Where more than one species of the genus *Bos* occurs in a country, and this condition exists in several countries, to say that a parasite has been collected from *cattle* is to leave one without definite knowledge as to the host. When we consider animals which are less familiar to people in general than are the domesticated animals, confusion arises, not only in our own language, but even in our own country. One fish, the menhaden, has a large number of different common names in different parts of this country, menhaden being known along our eastern coast as pogies, whitefish, bonyfish, fatbacks, alewives, old wife chebogs, hardheads and greentails. On the other hand, the word *trout* is applied in different parts of this country to very different kinds of fish.

What is gained by having scientific names? Not

only is the scientific name a definite thing referring to a definite kind of animal, and in that respect to be preferred to the indefinite and vague common name, where such a thing as a common name exists, which is seldom the case, but it is the only substitute for a lot of cumbersome verbiage, which would otherwise waste speech or paper and ink. A valid scientific name is coupled at its origin with a description of the animal named. The name, the description and accompanying illustrations, if any, and the animal described are three points of one entity. Of the three, the easiest to keep and to use is the name. This is a point worth considering by veterinarians who find it difficult to remember a scientific name. The name is much shorter than the description of an animal. Zoological names serve the same purpose that anatomical terms serve. It is easier to carry in mind the word *pylorus* than to carry an exhibition specimen of pylorus, and easier to use the word pylorus than to describe it each time reference is made to this structure. Similarly, it is easier to carry in mind the words *Cysticercus bovis* than to carry specimens of this parasite or to refer to it as a small cyst of certain dimensions and comprising a membrane enclosing a clear fluid and with an attached unarmed scolex. To be sure, *beef measles* is an equivalent term which is easily kept in mind, but this term is only good among those who speak and read English, and for every parasite that has an equally recognizable common name there are hundreds that have no common name.

In this connection it may be said that many students are baffled by the pronunciation of scientific names. This is a condition for which some teachers are partly responsible. They do not look up the pronunciation, are sometimes at sea on the subject of pronunciation, and convey their own uncertainty to the student, sometimes with accompanying comments as to the foolishness and uselessness of these scientific names anyway. The student, of course, is only too willing to accept the idea that he cannot pronounce these names, having already a conviction to that effect. As a matter of fact, scientific names are easier to pronounce than most of the words in our language. As a rule they are pronounced exactly as they are spelled and present no such appalling difficulties as are presented by such weird words as slough, plough, though, through, etc. Finally, one should not take these names too seriously anyway, as regards pronunciation. A good way to talk a foreign language is to go ahead and talk it; if we wait until we can talk it like a native before we talk it, we will never talk it. Go ahead, use scientific names, and when you are corrected in a mistaken pronunciation, accept the correction unabashed and with the realization that even specialists in one field make mistakes in their own field. By listening to an Italian, Frenchman, German or Japanese, in his early attempts to talk English, an American may acquire confidence to attempt Italian, French, German or Japanese.

Code of Zoological Nomenclature.

How are animals named? The person who first describes an animal is entitled to name it. It must be named in accordance with certain rules. These rules make up the Code of Zoological Nomenclature. The code provides, among other things, that the name must be Latin in form and binomial, that is, it must be made up of two parts, the first called the generic name and the second called the specific name. In describing and naming a new species, a worker usually tries to assure himself by a search of the literature that the species really is new. Sometimes the search is not made and sometimes it does not cover the necessary literature, with the result that the supposed new species is subsequently found to be already described under another name, in which case the supposed new name falls to the status of a synonym. However, assuming that the scientist has assured himself that a specimen represents a new species, he selects a Latinized species name for it, which name must be one not already used in the genus to which the species is referred. If he uses for one species of a genus a name previously used for a different species of that genus, the second name becomes a homonym (i. e., a *same name*). It is equivalent to Mr. Smith naming the new baby Mary, when an older daughter is already named Mary. The older daughter has priority rights to the name and a renaming of the younger daughter is in order if the names are to be distinctive. The scientist couples the new species name with that of the genus to which he thinks it belongs, using an existing name if he thinks the species belongs in an existing genus or proposing a new genus name if he thinks the new species does not belong in an existing genus. Similar species, closely related, are placed in the same genus. The placing of species in any one genus is largely a matter of individual opinion, modified by the collective judgment and usage of other workers in the field of zoology in which the new species belongs.

Why are names changed? Suppose we take a specimen illustration and examine the reasons for changing and discarding names.

Ixodes sanguineus, Latreille, 1804. This name, written in this form, indicates that Latreille named

a tick *Ixodes sanguineus* in 1804. Latreille is the author of the species *sanguineus* and of the combination with *Ixodes*. If the species *sanguineus* is shifted to another genus, Latreille's name is put in parenthesis, but it retains its position next to the specific name of which he is author. We may think of a genus name as a locomotive to which species names are hitched as cars; each car carries on its side the name of its maker. At the back it carries the name of the person responsible for hitching it to that locomotive (or genus). This is illustrated in the next paragraph.

Rhipicephalus sanguineus (Latreille, 1804), Koch, 1844. In the preceding paragraph, the car (or species) *sanguineus* was hitched to the locomotive (or genus) *Ixodes*. But since most ticks were referred early in the nineteenth century to the genus *Ixodes*, the train of cars presently became too long to draw well. The worker who tried to put a specimen of tick aboard its specific car had to look over a long mixed train of Pullmans, day coaches, cattle cars, box cars and gondolas before finding the right car. What could be more natural then, than to break up such a train, leaving *Ixodes* with its original car (the type species) and similar cars, and add new locomotives pulling all-Pullman, local day coaches or freight trains, so that one could take a species to the right train and examine a few cars instead of to a long mixed train? So the new genus *Rhipicephalus* was put on to take care of a number of ticks which had the common character of ticks in that genus, as one might put on a locomotive to pull coal gondolas. The species *sanguineus* was switched from the train of *Ixodes* and coupled to *Rhipicephalus* by Koch in 1844; it still carried Latreille's name as the author of the species, but now had Koch's also as the author of the combination, *Rh. sanguineus* (Latreille, 1804), Koch, 1844. Doubtless it was annoying to anyone who had learned *I. sanguineus* to have to learn *Rh. sanguineus*, but in the long run the change was a time-saver. This raises the question of synonyms, which may be illustrated as follows:

Rh. sanguineus (Latreille, 1804), Koch, 1844. Synonyms—*Ixodes sanguineus*, Latreille, 1804; *Ixodes dugesii*, Gervais, 1844, not *I. dugesii* Gervais of Megnin, 1880; *Rh. rubicundus*, Frauenfeld, 1867; *Rh. brevicollis*, Neumann, 1897. This list of synonyms is not complete, and there are species which have hundreds of synonyms. Obviously it would lead to interminable confusion if unlimited synonyms were to be added to our literature with no provision for designating a correct name which would be generally acceptable. Experience shows that the selection of such a name must be made on an objective basis, something that can be definitely ascertained and agreed upon, and not on a subjective basis, something that is a matter of opinion, taste or preference merely. Such an objective basis is found by agreeing to use the name which is first given, providing the name attaches to a recognizable description or to identifiable material. While this occasionally leads to annoyance where a much used and well established name must be discarded, because someone has exhumed an older name which has been overlooked and buried for years, it is still much more satisfactory than it would be to make such oversights a reason for not using a name.

It would soon become a matter of opinion only, in the case of many names as to whether use or disuse was such as to warrant retention or not, and there would be no definite settlement for cases of this sort. The same objection may be raised to all the other subjective tests of the validity of a name. Hence, in the above case, *Rh. sanguineus* is the corerct name of a certain tick, if one recognizes the validity of the genus *Rhipicephalus*, since *sanguineus* is the oldest name. It should be said in passing that *Ixodes sanguineus* is a good name, readily recognizable, and may be used if one prefers to maintain long trains of mixed passenger and freight cars rather than smaller trains of definite purpose. It is not wrong; it is merely less preferable than *Rh. sanguineus*. It is comparable to calling a woman Miss Mary Smith after her marriage has made her Mrs. Mary Jones. The next synonym in the list may be read as follows: *Ixodes dugesii* of Gervais, 1844, is a synonym of *Rh. sanguineus*, but *I. dugessi* Gervais of Megnin, 1880, is not a synonym and refers to a different species of tick, as his description shows, although he thought he had Gervais's species. The names given by Gervais, Frauenfeld and Neumann are not good names in the sense that Latreille's name is, since his is the original naming and theirs are renamings and have only the value of synonyms from their inception, though it may take some time to ascertain that they are invalid.

Administration of Capsules Dangerous to Swine.

Due to an oversight, the name of the author was omitted in publishing the article under the above heading, which appeared on page 602 of the December number. The article was from the pen of Dr. Maurice C. Hall, editor of our new Department of Parasitology.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D.V.S.

Osteismus in Its Relation to Rickets, Osteomalacia and Osteoporosis.*

The French designate as osteismus a predisposition of the bone tissue in horses to form bony growths of various types. It has been accepted up to date that these new formations develop as a result of inflammatory conditions, not only at normal work, but especially so as a result of strong exertions. This predisposition is hereditary. The nutrition of the animals plays the most important part in the development of these disturbances. The disease affects mostly thoroughbreds, but is also observed among draft animals, especially among those which mature early or which are reared on swampy grounds. As a rule it develops in young animals. In the course of the disease the following conditions develop: (1) Exostoses, (2) fractures of bones, (3) abnormal conformation of the hocks, (4) lameness without apparent causes, (5) inflammations of the joints and tendinous sheaths, etc. The author recommends a simplification of the terminology. As rickets, osteomalacia and osteoporosis are in their nature identical diseases, he suggests to designate them in young animals as primary osteismus and in adult animals as secondary osteismus.

*E. Lienaux, Rev. Gen. de. Med. Vet., No. 333 and 334.

Coccidiosis in Sheep.*

The author had the opportunity of observing coccidiosis in sheep in Germany which heretofore has not yet been described. The animals are usually affected at two months of age. The symptoms are inappetance, discharge from the nose and eyes, diarrhea, later constipation, rumbling peristalsis, irregular heart action, grinding of the teeth. They stand with the legs way under the body and arched back. There is a gradual emaciation, finally a comatose condition and death in from fourteen to twenty-eight days. Frequently the lambs die suddenly, without showing previous symptoms. The mortality is about 30 per cent. The autopsy reveals emaciation, pale watery musculature, bloody-serous fluid in the abdominal cavity. In the course of the small intestines there are pin-point up to pin-head size yellowish white or grayish white foci. The contents of the intestines is thin, fluid or slimy, punctiform hemorrhages under the epicardium, muscular degeneration of the heart, edema of the lungs and reddening of the nasal mucous membrane.

The histo-pathological examination reveals a desquamating catarrh, round-cell infiltration and swelling of the follicles. The glands appear hypertrophic as a result of engorgement of the glandular epithelia with coccidia.

The coccidia of sheep differ morphologically and biologically from the pathogenic coccidia of rabbits. It is apparently not identical with the Eimeria faurei but resembles that of the Eimeria Arloingi of the goat.

The treatment of coccidiosis of sheep is principally prophylactic. Separation of the affected and suspicious animals, destruction of the feces and repeated changing of quarters.

*Lerche, (D. T. W. 20, 1920).

Further Contribution to the Question of the Adaptability of the Hog as a Test Animal for the Diagnosis of Infectious Anemia in Horses.*

As proven by Frohner the diagnosis of infectious anemia in horses can be made with certainty only with the aid of transmission experiments with blood. Transmissions to other species of animals than solipeds were without results. In Japan where the disease attained a very wide extension it was established that the hog is susceptible to transmission tests. Habersand and Luhrs have also recently demonstrated that infectious anemia of horses in Germany may also be transmitted to hogs. The question therefore arises whether the demonstrated susceptibility of hogs is sufficient to utilize them as test animals for the purpose of diagnosing the disease. In order to determine this Kutsche injected a thirteen-months-old hog with 5 cc. of blood which was obtained from a horse artificially infected two months previously. This horse had been inoculated with the blood obtained from a hog infected with anemia and developed the disease twenty days following the inoculation.

The hog infected by Kutschke became sick, with

clinical symptoms (fever, reddening of the conjunctiva, loss of appetite, vomiting, dullness and depression). The principal changes in the blood consisted in an anemia of the secondary-regenerative type. The autopsy was negative. A susceptible horse was then inoculated with 20 cc. of defibrinated blood from the hog, the horse developing infectious anemia in a mild form in five weeks following the inoculation. The mild course was no doubt due to the double passage of the virus through hogs.

*E. Kutsche, (Monat. f. prakt. Tierh. V. XXX, p. 557).

Treatment of Sterility in Cattle.

Dr. Schermer, D. T. W., No. 22, 1920.

For the successful treatment of sterility, an absolute knowledge of the methods for the examination of pregnacy is essential. The author, who has had great experience along this line, prefaces his report with the description of the technic for such examinations. He considers as perceptible symptoms of sterility the following: vaginal discharge, dropping of the pelvic ligaments and enlargement of the vulva. Both of the last named symptoms are pathognomonic for the presence of ovarian cysts. The cause of the sterility is best determined by examination of the genital organs for pathological changes of the cervix, uterus and ovaries.

In the treatment of sterility, Schermer approves the views of Schumann which follows about midway between the treatment of the ovaries which prevails in Switzerland and the treatment of Albrechtsen who only treats the uterus. Schermer uses irrigations only in perceptible catarrhal conditions and aims to correct the sterility in the absence of catarrh by treatment of the ovaries and massage of the uterus. The technic and instruments are the same as used for the examinations of pregnacy.

Whereas the normal ovaries are about the size of a hazelnut in sterile cows, they are frequently enlarged up to the size of an apple, either as the result of yellow bodies or cystic degeneration. The corpus luteum, if present, should be removed. This is accomplished by squeezing the ovaries between the thumb and the bent index-finger and subjecting them to a gradually increasing pressure. The loosening of the yellow body can then be felt; it finally drops into the abdominal cavity and in its place a distinct depression in the ovary results. In case the ovary slips out of the hand during the squeezing it may be pressed against the lateral pelvic border and thus fixed. The elimination of the cysts is conducted in the same manner. The crushing, however, requires more force through the vagina. At the same time these cases should be treated for metritis. If no pathological changes can be demonstrated on the cervix and uterus, massage of the uterus should be undertaken.

The treatment of chronic metritis is carried out only when it is recognized by a mucopurulent secretion in the os, which at times appears only after the massage of the uterus. In the technic, Schermer follows the recommenadtion of Albrechtsen, i. e., the cervix is pulled out and fixed and after the introduction of the catheter it is thoroughly irrigated.

Treatment of the cervix is not absolutely essential. The author urgently recommends that practicing veterinarians undertake the treatment of sterility. In about 50 per cent of the treated animals, he obtained conceptions.

Vaccination Against Hog Diseases.

Prof. F. Hutyra, Allatorvosi Lapok, 1920, Nos. 7 and 8.

The first swine disease to be succesfully controlled by vaccination was swine erysipelas, for which Pasteur in 1882 successfully developed a method of vaccination which, with proper application, yielded good results. Later, this method was improved by Lorenz and Lechainche and proved very effective in practice. Our knowledge of the control of swine plague (hemorrhagic septicemia) is much more vague. Loeffler's swine plague, more correctly swine septicemia, occurs only rarely, and does not cause great losses and, therefore, is not of great significance. The chronic swine plague of pigs described by Ostertag, results from various causes—cold, wet cement stables, dietetic errors, etc. This disease, therefore, should not be combated with protective vaccination but by suitable regulation of maintenance and feeding. Against hog cholera caused by the filtrable virus, the blood of hyperimmunized hogs furnishes an effective immunizing product. Whereas, the substitute products which more recently are being prepared from the Bacillus suipestifer and the Bacillus suisepticus are of no value in this disease. They, however, might be advantageously used in the paratyphoid infections of pigs. Before vaccination is undertaken it is necessary to make a correct diagnosis, and in accordance with the clinical and autopsy findings the corresponding product should be used for the vaccination.

Veterinary Surgery

Edited by L. A. MERILLAT, V.S.

PERIODIC OPHTHALMIA.

ALTHOUGH classed as a microbian disease, the exact cause of periodic ophthalmia remains a mystery. While the condition is one that would seem to afford every opportunity for fruitful investigation, nothing definite has yet been shown as to its specifity. That cocci play some role has frequently been shown by cultures made from material from the affected chambers. These cultures in our hands have always proved to be diplococci of very low virulence. Injected into the anterior chamber of guinea pigs and of old horses they produced only a local ininflammation at the very seat of inoculation that would subside in a few days. Specimens taken from horses at different stages of the attacks produced the same results. Conjunctival injections were also negative. The injection of fresh material from an infected eye to a sound one of another horse produced more reaction and a more lasting inflammation than the pure culture, but the resulting phenomena were not those of a typical case of periodic ophthalmia with its persisting, destructive effects. Whether the agent isolated is specific or not is neither proved nor disproved by these facts, because young (susceptible) horses were not used, but they tend to show in a very striking manner that the disease is a localization of a general infection rather than a direct local infection of the eye.

Periodic ophthalmia is strikingly endemic in character. There are regions where it is a veritable scourge to the horse population. It is so serious in certain districts that the breeding of horses has been abandoned, the percentage of blind three-year-olds, four-year-olds and five-year-olds being so great. There are other regions where the disease is unknown. At times and upon certain occasions it becomes enzootic. It created great havoc among the military horses of the World War, especially among those of the British.

The disease is a succession of inflammatory attacks of one or both eyes, accompanied by a certain amount of systemic disturbance. Each attack leaves a certain amount of permanent damage to the structures within the eyeball. The capsule of the lens, the iris and the cornea are its points of predilection. A single attack may be severe enough to produce permanent blindness. On the other hand, the attacks may be so mild as to leave the sight only partially impaired after three or four successive attacks.

In severe cases the patients exhibit fever and a general malaise that have often been mistaken for the eye manifestations of influenza—pink-eye. Likewise pink-eye has sometimes been confused with periodic ophthalmia. These are, however, usually errors of the layman. Differentiation is not difficult for a trained veterinarian. The intense conjunctivitis wth a minimum of ophthalmitis is easily distinguished from the intense ophthalmitis and slight conjunctivitis of periodic ophthalmia. Then the temperature of periodic ophthalmia seldom rises above 103° F., and it always subsides after the second day. The first attack always causes more systemic disturbance than the subsequent ones.

There is no regularity whatever in the intervals. The attacks may succeed one another in rapid succession; even before one has aborted the next one may occur. Three or four attacks may occur in a single month and cause total blindness. Other cases are very chronic in character, lasting for several years with irregular intervals of months between attacks.

In view of these facts it is easy to explain why certain treatments have been given credit they do not merit. The long intervals between attacks were mistaken for cures.

It is the writer's opinion that there is no cure for periodic ophthalmia today that merits very much credit. Mydriatics will prevent synechia from given attacks and antiphlogistic remedies will modify their severity and thus "guide" the milder types of cases through the different recurrences the patient is destined to suffer, with less permanent damage than if left unchecked. But no remedy except surgery will prevent recurrences.

Remedial measures should have three definite objectives:

1. Prevention. There is a need for a biologic agent that will immunize young horses against attacks in the regions where the disease is so prevalent.

2. Local treatment of given attacks that will prevent the inflammatory action from damaging the structures of the eye permanently.

3. A check against recurrence. In lieu of the desired immunizing agent we have adopted a simple surgical operation that has merit if done properly and at the proper time. A carefully executed evacuation of the aqueous humor through a puncture at the inferior part of the corneosclerotic margin has merit. It must be done between attacks and not during them. It is useless as long as there is a vestige of inflammation remaining, and of course will not correct the damage of previous attacks. It is futile against synechia or opacity of the lens or cornea. Where such lesions have supervened it would be futile to attempt to improve matters by the mere evacuation of the aqueous humor. In such cases the sight is doomed.

The greatest obstacle to the popularity of the operation lies with the owners themselves, since there are few who will submit a subject for operative treatment at the time the eye is apparently well, and when the next attack has occurred surgical interference must again be postponed, and then it is too late, because traces of lenticular damage are usually found.

The operation can be performed in the standing position on tractable horses. The eye must be thoroughly anesthetized with cocain and the head properly secured. An eye speculum is helpful but not absolutely necessary. The incision is made with a sharp-pointed tenotome or keratome at a right angle with the corneosclerotic margin inferiorly. Cross incisions may cause a slight intra-ocular bleeding from cutting the small radiating corneal vessels. As the cornea is a very tough membrane the tenotome or keratome must be very sharp and pointed. When the puncture is made the humor is pressed out until the chamber is entirely collapsed. The incision may be held open with a very tiny probe when there is any difficulty in squeezing out the contents. The important part of the operation is the anesthesia, for if the animal moves or rolls the eyeball it is very difficult to make the puncture at the proper place. We have found incisions made at the upper part of the cornea much less effectual.

The operation is purely empirical. It was born of a suspicion once entertained that between attacks the detritus lying dormant on the floor of the chamber ready to "kick up" for the next attack, was thus evacuated.—L. A. M.

Surgical Allusions.

(Continued from November issue.)

No. 14. Prof. Daubigny, Director of the Veterinary Faculty of the University of Montreal, from an experience covering a whole lifetime in a city practice, reports that the untoward sequelae following plantar neurotomy are very materially reduced if both nerves are not divided at the same time. By allowing an interval of two weeks to a month to intervene between the two operations the baneful results (break downs, degenerations, etc.), were reduced from 20 percent to less than 4 percent, in an observation covering 400 cases.

There is very sound logic underlying this method of procedure. The sudden resumption of the weight-carrying power of a diseased foot produced by plantar neurotomy damages the diseased organs faster than the compensatory regenerative process can repair them and thus the degenerative changes go from bad to worse until complete dissolution occurs. By dividing only one nerve at a time, the compensatory repair of the damage is less seriously impaired and is more likely to be sufficient to meet the subsequent requirements of the affected limb.

No. 15. From a continued added experience and observation it is becoming more and more evident that the incision of choice for all fistulas of the withers is along the median line overlapping the tumefied region forward and backward far enough to assure a complete exposure of the affected ligament and bones. Even without lateral drainage, such incisions alone (with ordinary wound treatment) effect a cure, sometimes with little more than turning them out to pasture or feeding in a box or paddock from the floor. It seems that the chronicity and well known disposition of fistulae of the withers to become more and more serious is due to the anatomical arrangement of the region affected: The uppermost tissues are very dense while those beneath become progressively looser in the downward direction. Besides, the lower the pus burrows in these loosely arranged layers of muscles and liga-

ments the farther it is from the surface of the body. Every attempt to drain by gravity is futile, because of the great distance of the bottom of the tract from the external level of the neck. The central median line incision reverses this order of things and transfers the point of least resistance to the top, and thus not only prevents further burrowing in the downward direction but also enables the operator to remove such harmful elements as necrosed tissues and bones.

No. 16. Several inquiries received regarding the technic of the skewer operation for the cure of umbilical hernia indicate that there is still some misconception as to the chief objective of this simple operation. The skewer operation is a method of pressing the peritoneal layers of the hernial sac upward into the orifice where the resulting inflammatory action will fix it as a permanent plug. The skewers should, therefore, be passed between the skin and the peritoneal layers and never through the latter. An indispensable feature of the operation is the marking out of the field to be "skewered" while the colt is still standing, because the relations of the skin zone to the orifice shift when the colt is placed on its back for the operation. It must furthermore be remembered that the skewers are simply intended to keep the ligature securely fixed at the level of the abdominal wall. They retain the ligature while it strangulates the redundant skin and while the peritoneal layers of the sac become adhered around the orifice and thus form a floor across it.—L. A. M.

Specific Polyvalent Serum.

Until recently the American veterinarian has not availed himself of the specific polyvalent serum of Lechainche and Vallee already utilized in France since the first years of the war. During the period of hostilities the entire output was commandeered by the French government, the same as all products of this character, but after the signing of peace *l'Institute de Serotheropie* of Toulouse began its manufacture and distribution for general use. That no American firm has undertaken its distribution is due no doubt to the dearth of publicity thus far given to its indication and merits.

The product is made by the immunization of horses against the different micro-organisms of suppuration by a special method. It is indicated in the treatment and prevention of all wound complications and diseases in which staphylococci, streptococci, colibacilli, etc., play an important role, such as traumatic septicemia, strangles, influenza, canine distemper, purpura hemorraghica, pneumonia, etc. In all of these it plays a double role, possessing the properties of normal horse serum plus the virtue of specific antibodies.

The physiologic properties of normal horse serum is well known. It forms an isolating cover over wounds and thus produces the most favorable condition for rapid regeneration. It protects the cutaneous layers and mutilated parts that would otherwise require excision, but it is its specific properties that are the most precious because these assure an active phagocytosis, modify and retard suppuration and prevent its development. While chemical antiseptics devitalize tissue cells the serum protects them, attacking the micro-organism alone.

In diseases prone to become complicated with pyogenic agents it is preventive, hence its great value in the treatment of equine influenza, canine distemper and contagious pneumonia. In these diseases its action is of course indirect. Its physiologic properties exert a favorable influence on the disease itself and its specific properties prevent the complications.

For general or local pyogenic infections the serum is indicated in the form of intravenous or subdermal injections as a preventive and treatment of all affections due to micro-organisms of suppuration; that is to say, it is indicated in the general pyogenic infections and visceral localizations complicating suppurations or specific diseases.

Locally upon wounds it is employed exclusive of chemical antiseptics. It is important that the serum be placed in contact with the anatomical elements requiring the solicited reaction. A wound must be well cleaned and rid of all harmful elements covering it. After this surgical cleaning up, the raw surface may be washed with a sterilized normal salt solution. Drainage is important to prevent the wound secretions from displacing the serum.

In synovial infections it is found useful in the form of injections into the synovial sac (tendinous or articular) or as a topical application held in place with bandages.

The dosage is large. As a preventive, dogs take 10 to 20 cc. and horses 20 to 40 cc. The curative dose is 40 cc. for dogs and as high as 100 cc. for horses. These doses should be given each day until the temperature drops. In the horse intraveneous administration is the preferred method.—L. A. M.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Control of Infectious Abortion*

MY DISCUSSION of the subject will be brief, since I have nothing of much consequence to add to the paper I presented to this association a year ago. I shall not attempt to discuss the control of infectious abortion by biologics, from a practitioner's standpoint, other than to say that on this question I am an agnostic as to the value of bacterins in preventing abortion after animals have conceived. I am ready to concede that bacterins should do no harm, but up to the present I am not convinced that they have been of any special aid to me in my work of controlling this infection under ordinary herd conditions. However, this may be entirely due to faultly technic, or to the lack of knowledge as to the proper time of administration, the proper dose, or the strain of organisms that should be used. I, therefore, have no quarrel with anyone who wishes to use them and insists that they are giving them desired results. In fact, I want to admit that I am using them and shall continue to use them, in the hope of gaining some knowledge as to their value or satisfying myself that they are without value; keeping in mind that laboratory and experimental results are not always as reliable as information gathered from treatment carried on under ordinary farm and stable conditions.

As to vaccines, it would seem as though active immunization should be our hope, but the veterinarian must guard himself from criticism or possible liability by using live organisms in supposedly sound herds, until experimental evidence points very definitely to their safety. Neither must we fail to recognize and warn owners that apparently clean herds are sometimes most in need of immunization, if strange animals are to be brought into the herd, since when an outbreak of abortion occurs in such a herd, it usually goes through it like a storm, as if demonstrating what the lack of immunity will do.

The bacteriologist has had an important part in dealing with serious contagions, and I am sure, some day, he will have an important part in dealing with abortion.

Notwithstanding that we are not entirely decided on these important matters, it is my belief that this malady and its resultant disasters can be reduced to a minimum by (1) sanitation, (2) isolation, (3) the proper cleansing of an infected uterus when gestation ends.

But the unfortunate thing about applying the knowledge we now have in controlling infectious abortion, is that it does not seem to be generally known or practiced. Most of our breeders and herd owners seem to understand the meaning of the words, "contagious" and "infectious," when they are applied to the other fellow's animals, but apparently only a small percentage of them recognize the great danger of leaving in the stable with other bovine females, a cow that aborts or one that retains her membranes.

They seem equally as ignorant or indifferent of the danger of infectious discharges when they move the infected animals to other quarters, not seeming to understand that the discharges are the real source of danger; therefore, I, as one of your Committee of Infectious Abortion, have set forth in the report that I would not be adverse to recommending some reasonable conservative method of control, that would bring to the public's attention the necessity of recognizing these dangers.

My suggestions to the chairman of your Committee on Infectious Abortion were as follows:

"I would not be adverse to recommending some reasonable conservative control methods. I have felt for some time that the states would be justified in placing some control over ani-

*Presented at the U. S. Live Stock Sanitary Assn., Chicago, Ill., Nov. 29-Dec. 1, 1920.

mals that recently aborted, or pregnant animals that have been exposed during pregnancy. If we could control such animals by quarantine and keep them from getting into clean herds, or into herds in which infection has lost its virulence for the animals in that particular herd, I feel we would have taken an important initial step. My idea would be that an owner in selling a mature, female bovine, for other than immediate slaughter, should be compelled by law, to give the purchaser a statement as to the animal's breeding, history as far as he knows; also this statement should include such knowledge as the owner may have as to whether the animal has been exposed within a certain time to known infection, that is, a cow that has aborted or a cow that has held her membranes. The purchaser, in turn, should be required when purchasing exposed mature females, to hold such in quarantine until they have either calved normally, or in the case of a non-pregnant cow, for a period sufficient for the virus to become mitigated or die out, since I believe we are agreed that that seems to be the natural tendency.

"The regulations, of course, should have legal form, involving penalties for violation. Then, if such regulations were even only partially enforced, it would gradually bring to the public's notice the necessity of these precautions, in order to control infectious abortion.

"I realize, however, that if regulations of this sort were put in force by law, it would be best at first to have such regulations apply only to pure-bred cattle or animals brought into pure-bred herds. I feel reasonably certain that most owners of grade cattle are not now in position to carry out such regulations. As a matter of fact their burdens are now more than they can take care of under the present small margin of profit in the cattle and dairy industry, and the fearful situation as regards farm labor. I also realize that in suggesting any regulations of this sort we would need to admit that such restrictions would not reach all carriers, particularly those showing no symptoms of infection, but we must not forget that there are many infections in which all the carriers of virus are not detected and controlled.

"Proper sanitation and isolation of aborting animals are vital points in its control, and a comparatively small percentage of breeders and dairymen recognize today the great danger of leaving in their stables, with their other cows, a cow that aborts or one that holds her membranes. They seem equally ignorant and indifferent of the dangers of infectious discharges when they move the infected animal to other quarters, not seeming to realize that the discharges are the real source of danger. This is unfortunate, since proper attention to the uterus of aborting cows, and strict sanitation, is, I believe, the only solution of the control of infectious abortion and its ravages, with our present knowledge or lack of knowledge."

Iodin for Leaking Teats.

I am writing you in regard to your best method or methods of treating leaking teats. I have had several of these cases where the sphincter muscle appeared to be in a state of paralysis or relaxed to such an extent that a constant stream of milk flowed from the affected quarter. What is an efficient method of treatment?

I have also a case in mind where the lower extremity or opening of the milk duct was injured, thus leaving an enlarged opening and the sphincter muscle relaxed so that the milk flows constantly. Could you suggest a successful treatment for this condition?—C. W. B., Kans.

Reply by Dr. De Vine: I do not believe that there is any entirely universal satisfactory method for treating leaking teats. There are several practical things that may be done, some of which fit different cases very nicely.

A mild blister of biniodide of mercury sometimes creates an inflammation and swelling that apparently strengthens the sphincter and improves the condition very much. This is particularly so in cows that are about to go dry or that are dry. Cases in full milk sometimes are benefited by dipping the end of the teat in iodin, sufficiently often to keep it slightly irritated.

Copper sulphate solution may in some cases work better than iodin. Large teats with a very flabby sphincter are often decidedly benefited by dipping a probe into iodin and passing it up into the teat an eighth of an inch or so, repeating it sufficiently often to create an irritation and swelling of the teat.

Where any of these treatments are not advisable, particularly where an animal is in full milk, or for instance, a show cow with a beautiful well balanced udder, and the danger of irritating the quarter must be avoided, a small elastic band placed moderately tight on the teat between milkings is sometimes a satisfactory makeshift.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

REPORT OF COMMITTEE ON INFECTIOUS SWINE DISEASES*

By W. W. DIMOCK, A. T. KINSLEY, W. E. KING, R. A. CRAIG, M. DORSET, R. R. BIRCH and ROBERT JAY.

WE WISH to emphasize the point that the diagnosis and differential diagnosis of diseases are dependent upon a fundamental knowledge of pathology and bacteriology; upon knowing all the different diseased conditions that must be taken into consideration in a particular case and upon having a working knowledge of the characteristic features of infectious diseases of swine as they are at present classified and understood. To attempt an interpretation of particular diseased conditions without such accurate and intimate knowledge of the fundamental principles of general science and medicine will invariably result in failure.

With the development of the science of pathology came a gradual understanding of the nature and action of infectious and toxic agents and the lesions that developed during the course of the disease. Therefore, the diagnosis of a disease was determined from a study of both symptoms and lesions. Again, with the development of the science of bacteriology we were able to connect the symptoms and lesions that resulted from the action of particular infectious agents, regardless of the location of the infection, and we felt that the microbial classification of diseases was the only positive method, and therefore all were striving to determine the nature of the diseases from a study of the microorganisms that might be found in the diseased tissue. The etiological classification of diseases is the most desirable method, but it has its limitations. The specific nature of a disease may be determined by isolation of the causative agent, by animal inoculation, or by certain laboratory tests. In our work of classifying diseases according to etiology, there has been a tendency to neglect the question of symptoms and lesions, and in many cases we have fallen into as great an error in dealing with diseased conditions through laboratory findings as in former times, when we relied almost wholly on the symptoms. In some cases we do make a clinical diagnosis; in other cases our diagnosis is based largely on the morbid anatomical findings, and in other cases we depend wholly upon a demonstration of the etiological factor.

Experience shows that, with a few exceptions, no one of these different methods should be used to the exclusion of the others; but the reliable and trustworthy diagnostician takes all of them into consideration. Even though he finds, upon examination of the diseased animal, or tissues from an animal, dead of a certain disease, a certain microorganism, the nature of which may or may not be known, he feels that it is best to know in addition the pathological anatomy and the history and symptoms before drawing conclusions; because the finding of a particular microorganism in the tissues of animals is not necessarily conclusive evidence that the particular organism was the only, or the primary, cause of the disease. Neither should he draw too definite conclusions from a study of the symptoms or lesions. Above all, a one hundred percent consideration of all possible avenues of information should be the policy, and by correlating the morbid anatomical findings with the history and symptoms and the laboratory findings, provided a reliable laboratory examination has been made, a diagnosis can usually be made.

We find the practitioner of veterinary medicine at one extreme and the laboratory worker at the other. The practicing veterinarian has his trouble, because while he may have seen all the lesions characterizing the different diseases of swine, is an expert on the recognition of symptoms, and is generally skilled in field procedure, his principal difficulty lies in the fact that he too frequently does not have the information

*Read at the meeting of the U. S. Live Stock Sanitary Association, Chicago, Nov. 29-Dec. 1, 1920.

necessary to enable him to interpret correctly the various pathological changes that are so frequently found in sick and dead pigs. On the other hand, the man in the laboratory who has studied swine diseases from the standpoint of laboratory examination and experimental inoculations, is frequently without personal information as to the general nature and clinical character of the disease with which he may be working. Both the laboratory worker and the man in the field must know the diseases of swine that have been recognized as existing in the country, and it is understood that they are more or less familiar with the diseases that are common to the section in which the disease occurs. Clarification of the whole situation depends upon the accurate coordination of information from the two greatest sources that have furnished information to mankind, the practical experience and knowledge from the field, and the scientific facts brought out by experimentation.

Nomenclature of Swine Diseases.

The following terms are commonly used to designate diseases or pathologic conditions other than parasitic infestations of swine: Hog cholera, swine plague or hemorrhagic septicemia, intestinal necrobacillosis or necrotic enteritis, or infectious colitis, necrotic stomatitis, infectious rhinitis, malignant edema, anthrax, infectious abortion, actinomycosis, tuberculosis, rabies, tetanus, arthritis, paraplegia or paralysis, dysentery of suckling pigs, pneumonia, thumps, infectious bronchial pneumonia, or influenza, and a condition known as measles. There has been much confusion in the names given to swine diseases, and some of these terms are applied to conditions which no doubt rarely exist as independent infections. For some of the above the causative agent is definitely known, and for others the character of the disease is such as to leave little doubt concerning their infectious and specific nature, and of still others comparatively little is known. However, there is still much to be learned regarding all of them, especially from the standpoint of etiology and prevention.

Research on the infectious diseases of swine in years to come, we are confident, will gradually clear up the many puzzling questions now before us. Important discoveries will no doubt be made as the work goes on. In some instances this will tend to confirm our present interpretation of some diseases as classified, and our theories and opinions regarding them, while in other instances it will no doubt show that we are mistaken.

Hog Cholera Still Most Important Disease.

The committee wishes to emphasize the fact that hog cholera still is, and no doubt will continue to be, the most important infectious disease of swine with which we have to contend. More effective control of hog cholera will come from an early diagnosis and a more general and consistent use of anti-hog cholera serum.

The history, symptoms and lesions of this disease are so well known that there is no excuse for veterinarians being unfamiliar with them. In cases where the diagnosis is in doubt we would respectfully suggest the following procedure:

In many herds where cholera infection exists, other infections, either specific or non-specific, and parasites may be present to the degree of modifying the clinical picture and lesions of cholera, and therefore the one making the examination may be misled as to the primary cause of the existing trouble.

In all diseases resembling hog cholera, the presence of hog cholera infection must be positively excluded before other agents can be accepted as primary or important causes.

The laboratory attempts to exclude the filtrable virus by drawing blood from recent rather than old cases, and filters and injects this into susceptible pigs under proper control. In all cases that prove to be negative, the susceptibility of the pig should be demonstrated.

In case of sweeping infection followed by severe losses either before or subsequent to serum-virus treatment, no other cause than hog cholera should be accepted until the possibility of the presence of the filtrable virus has been excluded.

Necrotic Enteritis: There is considerable difference of opinion among workers as to the specific cause of this disease.

Many different bacteria have been isolated from the infected animals, and our failure to reproduce a typical form of the disease, experimentally, with them, has caused considerable doubt as to whether any one of these organisms is the primary cause. Therefore, at present, we cannot diagnose the disease by bacteriological examination. This disease can in most cases be recognized from a careful study of the history, symptoms and lesions. In the differential diagnosis, the possibility of cholera infection being present as an accompaniment of this infection should always be considered and eliminated before attempting to control the disease.

Swine plague, or the condition supposed to result from B. bipolaris suis, is apparently not

the serious disease of swine that it was once considered. In an uncomplicated form it is a rare disease of farm hogs, and does not cause sweeping losses. In herds that have had their resistance lowered by disease, shipping and other weakening and predisposing influences, it may be a factor.

For every infectious disease of swine there are, we believe, definite characteristic features. In one case, the known characteristics may be confined to the symptoms; in another, to the etiology; in another, to both the symptoms and lesions; and in still other instances, all three conditions are characteristic. Further, the history of the development of a disease, its course and duration, symptoms and lesions and mortality, are all important factors and should be weighed, together with the presence of microorganisms, in drawing conclusions.

Diagnosis Requires Accurateness and Discrimination.

To diagnose diseases of swine requires a complete history; a differentiation of the symptoms and lesions; and a search for the causative agent, in the order indicated.

Let us emphasize that satisfactory and reliable progress can be made only by fully considering every minor ailment from its fundamental inception. In other words, every-day experience has demonstrated that a knowledge of specific conditions is of uncertain value except when supported and considered from the standpoint of general pathology.

In the differential diagnosis of infectious diseases, it is often necessary to know the nature of non-specific and organic morbid conditions, the various forms of parasitisms, poisoning and dietary troubles. The importance of organic diseases is well brought out when we stop to consider that many of the infectious diseases may cause death of an individual some days or weeks previous to the time when the herd as a whole became infected. In cases of poisoning, several animals in the herd may die suddenly. This is also true of some infectious diseases. Further, there is considerable evidence to show that organic diseases, especially of the respiratory and digestive tracts, and cases of poisoning from intestinal irritants, may predispose to other infections.

The chronic nature of necrotic enteritis and of certain forms of parasitism makes the question of differentiation of these conditions all important. It is evident that the diagnosis and differential diagnosis of infectious diseases requires an accurate knowledge of all diseases and diseased conditions to which swine are subject. In most cases it is essential, and in every case it is advisable, that our diagnosis be confirmed by reliable laboratory methods. Therefore, laboratory diagnostic methods, such as blood examination, bacteriological examination, specific clinical and serological tests, and experimental inoculations, are absolutely essential if we are to accurately and positively diagnose and differentiate the various infectious diseases. However, these tests should be carried out to confirm clinical and pathological findings. To proceed to treat, prevent and control disease on the result of laboratory findings alone, will not, as a rule, give satisfactory results, and may in some cases be erroneous, impractical and unnecessary.

Feeding Floor Economical and Sanitary.

The proper equipment for the feeding of swine has been given little attention by a large number of swine breeders, and some veterinarians have not given sufficient thought to this subject to intelligently advise their clients. The old method of throwing corn out into feed lots is insanitary and expensive. Swine will not obtain the necessary quantity of feed under such circumstances and they will consume more or less filth, and thus they may obtain a variety of infections. Necrotic enteritis may have had its origin under such conditions. Other infections of swine could easily result from such methods of feeding. Why swine do not suffer more from digestive disturbances when fed in mud and filth is miraculous. Such feeding habits permit of parasitic infestation, which condition is responsible for excessive losses in swine every year. These conditions are favorable for the continuance of parasites on a premise.

The idea that swine should be kept in filth is absolutely wrong, and is not in accord with the native habits of swine in the wild state.

It is not difficult to provide an economical and sanitary feeding floor on every farm. It is true that such equipment requires an outlay of some capital, but money so spent will be a splendid investment. Some feeders prefer a board platform or floor upon which the feeding can be done either on the floor direct, in troughs or in self-feeders. Concrete is, generally speaking, superior to lumber, because it is more permanent and the absence of crevices and cracks makes the concrete much more

sanitary. In the construction of a feeding floor the location for convenience and drainage should be kept in mind. The top of the platform should be above the surrounding ground and the surface of a concrete floor should be left sufficiently rough to provide footing in wet weather. A platform 16x24 feet provides sufficient feeding space for fifty swine.—A. T. K.

Cholera Losses Diminished.

Innumerable outbreaks of hog cholera have been reported in various sections of the country, but the losses from this disease this season have thus far been relatively small. The diminished losses have been due to two factors. First, the type of cholera is apparently much less virulent than it was in 1912-13. Perhaps the persistent immunization may have produced an increased resistance in the swine, or perhaps the virus has become less virulent. Second, the swine breeders and veterinarians are alert, and as soon as there is evidence of hog cholera in a community, not only the affected herd is properly immunized, but also all herds of swine on adjacent farms are likewise immunized. The promptness of immunization has been facilitated by the fact that potent anti-hog cholera serum can be obtained quickly.

Practically every state sanitary board has been active in the hog cholera campaign and, fortunately, they have made strenuous efforts to prohibit the spread of cholera by the proper education of swine breeders to the necessity of carefully observing their swine, and they have urged them to call in a competent veterinarian at the first indication of disease.

Some apparent cholera breaks have occurred in stocker hogs immunized at public markets. In a few cases, cholera has been introduced by stock hogs into certain sections of the country where this disease had not previously occurred this season.

It is gratifying to know that cholera losses have thus far been less than in former years, and it is well that such is the case, for the diminished pig crop in the fall of 1919 and spring of 1920 will result in a scarcity of pork products.—A. T. K.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Wild Nettle.

Dr. W. G. Hunter of Mount Vernon, Ind., sends a specimen of nettle with the following letter:

"Under separate cover I am mailing to you a specimen of a plant, requesting that you send me any information possible as to its value medically and its identification.

"This plant grows in the moist sandy soil along the streams of southern Indiana and Kentucky, coming up in the early spring, and growing to a height of three to five feet and during the summer months bears a small white berry. This plant is used very extensively by some of the home herb doctors, who make a decoction of the roots of the plant and apply it locally in many conditions of acute inflammation with very satisfactory results."

Readers are urged to take advantage of the opportunity offered by Dr. Pammel, for the identification of specimens of supposedly poisonous plants. Two good-sized specimens, carefully packed, should be sent to him direct, with such history as may be available. Simply mention that you are a reader of VETERINARY MEDICINE and no charge will be made for this service.

Reply: The weed is quite urticating, causing urticaria when it comes in contact with delicate mucous membranes.—L. H. P.

Alfalfa Dodder.

"I was called to a dairy herd yesterday to see some cows that the owner said were failing in their flow of milk. I went out and found three cows affected; one animal had a temperature of 107° F., pulse 66, with respiration 30. The other cows had a temperature of 104°, pulse 50, respiration 0. These latter appear to be recovering as they were in the same condition as the cow first mentioned, the day before

The other two cows had a temperature of 104°, pulse 50, respiration 0. These latter appear to be recovering as they were in the same condition as the cow first mentioned, the day before

I was called. I could find no other symptoms of disease present in any of these cases; all three were eating heartily, chewing their cud and licking themselves. From what the owner says, the condition seems to be ushered in with a chill, as he says that the animals tremble all over when first noticed. The secretion of milk seems to be completely suspended in all three, and they all recently calved.

"Upon investigating the food used I find that only alfalfa hay is being fed, but as you will notice, this little parasite is present in large quantities. Any enlightenment you can give will be greatly appreciated."

This parasite is alfalfa dodder. In my "Manual of Poisonous Plants" I have the following to say with reference to this dodder: "The dodders (*Cuscuta*) belong to the family *Cuscutaceae*, and are of interest in this connection mainly because they are parasitic in clover, alfalfa and other plants. Those growing on the above named plants are *Cuscuta arvensis* and *C. Epithymum*. Dr. J. L. Taylor of Lisbon, Ohio, wrote Prof. A. D. Selby that when dodder was fed to horses it caused bowel trouble. Dr. E. H. Jenkins of Connecticut states that cattle were seriously troubled with scours when clover hay in which this plant occurred was a part of the ration. He could not determine whether it was the dodder or the hay, which was moldy, had caused the poisoning. When the hay was cut out of the ration the trouble ceased."

Poison Ivy and Poison Sumac and Their Eradication.

C. V. Grant and A. A. Hansen have issued a bulletin on the subject of poison ivy and poison sumac and their eradication.* These writers have brought together some of the material pertaining to poison ivy. The bulletin contains some excellent pictures of the different types and poison oak. In general, the information given is not new, but is brought together in very good shape. The following may be of interest to readers of VETERINARY MEDICINE.

"Poison ivy and poison sumac are close relatives and are alike in their poisonous properties. Their poisonous principle is a non-volatile oily substance known as toxicodendrol, which has such violently irritant properties that the slightest trace deposited on the skin is capable of producing severe inflammation. All parts of the plant contain the poison, even after long drying, but growth in which the sap is abundant is the most dangerous.

"Poisoning is usually caused by touching or brushing against the plants or by handling clothing or other articles which have been in contact with them. On the other hand, many persons are convinced that they have been poisoned in passing by the plants or observing them from a short distance, without actually touching them, by particles carried through the air. There is much difference of opinion and conflicting evidence on this point. Many sensitive individuals find that they are fully protected by avoiding actual contact with the plants or with articles contaminated with the poison. It is well known, however, that smoke from the burning plants will carry the poison and may cause serious injury.

"Many persons believe themselves immune to ivy poison and seem to be able to handle the plants freely without being harmed. Experience and experiments seem to show, however, that complete immunity to ivy poisoning does not exist, and many supposedly immune persons have not only been poisoned by carelessly handling the plants, but afterwards have suffered attacks on the slightest exposure.

"Taken internally in sufficient dosage the plant is a violent irritant poison. Cases of children who have been poisoned by eating the ripe fruits have been reported.

"The symptoms of ivy poisoning are produced as the irritant poison penetrates the outer surface of the skin, and they may appear within a few hours or be delayed until five days or longer after exposure. Itching or burning sensations, with reddening of the poisoned surfaces and more or less swelling, are first noticed, usually followed by the appearance of small vesicles, which may show a tendency to run together and form blisters. Pus may form in these vesicles, followed by a crust or scab formation as the eruption dries. The acute symptoms of the attack usually continue to develop for a day or two, followed by gradual improvement as the effects of the irritant wear off."

*Farmers Bulletin No. 1166, U. S. Dept. of Agr., Washington, D. C.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

Trouble Due to Foreign Body.

I am mailing a sample of pus taken from the diaphragm of a horse that died of pleuritis and peritonitis, but in my opinion the first named was secondary and perhaps caused from the abscess which was just to the left of the center of the diaphragm, the posterior border of the left lung being attached to the diaphragm at the point where the abscess was located; likewise, the liver on the opposite side of the diaphragm was adhered, and the liver was also enlarged, but the kidneys, the liver and lungs contained no abscesses. The primary seat of the abscess was in the diaghragm and there was a thickening of the diaphragm about six inches in circumference, and within this zone there were two very small abscess pockets.

In the autopsy I mutilated the diaphragm before I was aware that I should have preserved it intact, to determine the cause for the condition and for further study of the pathological condition. There was a circular opening in the center of this affected zone and as I had severed the esophagus close to the stomach in the postmortem examination, I did not take into consideration that the esophagus might pass through this opening and that this might be a case of injury by a foreign body penetrating the esophagus at this point. I found no abscess in the lung substance. The thoracic cavity contained a considerable quantity of yellowish fluid with fibrin floating free.

Considering that I was a little hasty in my autopsy, I would like a laboratory examination of the specimen in order to eliminate, possibly, tuberculosis or glanders; there the examination reveals only ordinary organisms I must conclude the trouble was caused by a foreign body.

The history of the case is as follows: About six weeks before I saw the patient the animal had been sick with colicky pains, and it would sit on its haunches at times like a dog. This attack left the animal in a poor condition from which he never entirely recovered. This horse was nine years old. No treatment was attempted. I told the owner to notify me when the horse died, so that a postmortem examination could be made.—H. H. P., Idaho.

Reply: Examination of this pus did not reveal any tubercle bacilli or B. mallei. The sample consisted of degenerated masses which had no histologic structure. The bacteria which were observed were of questionable importance so that their presence was of no diagnostic value.

You are without doubt safe in eliminating the possibility of tuberculosis having been present, and probably glanders also. From what you say regarding the history of the case, it appears very much as if your diagnosis of "foreign body" was correct; the object perhaps had first lodged in the esophagus or the stomach.—C. A. Z.

Directions for Packing Specimens for Laboratory Examination

1. Gross anatomical lesions, where a bacteriologic examination is desired, are best sent packed in an ample quantity of borax. A corrugated paper or wooden box is preferable to an air-tight container (can). As second choice, such specimens may be carefully wrapped in cloth, wet in a 10 percent formalin solution, properly boxed.

2. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.

3. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), air-tight. Such specimens should reach the laboratory quickly. If sent by parcel post, should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute with sterile normal salt solution to prevent drying. Sterile containers supplied free on request.

Chemical analyses cannot be furnished free of charge, owing to the vast amount of work involved.

Send all correspondence and specimens to Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

Contagious Abortion Indicated.

The specimen I am sending you is from a cow which had just aborted. There is no doubt in my mind but what it was a case of contagious abortion, as three other cows in the herd have aborted recently. There was considerable blood accompanying the discharge and the owner thinks perhaps it was an accidental abortion as the entire herd was bacterinized with a bacteria claiming 95 per

cent results, following the second abortion in the herd which is about 90 days past.—F. F. S., Illinois.

Reply: Examination of this specimen so far as carried out, revealed bacteria which strongly resembled B. abortus (Bang).

From what you say in your letter, and the results of the examination just referred to, there seems to be no question but that your diagnosis is correct.—C. A. Z.

Spoiled Specimen Precludes Satisfactory Laboratory Diagnosis.

We are sending you a portion of a placenta from a cow in which we suspect contagious abortion. Please make laboratory examination.—J. W. McC., Illinois.

Reply: No pathogenic organisms were found, so that we cannot definitely advise you whether or not contagious abortion is present in the herd. The specimen was considerably dried out when it reached us, which naturally was a severe handicap in making a bacteriological examination.

We would suggest that in the future, such specimens be wrapped in a piece of gauze, dampened with a 4 or 5 per cent formalin solution. This will tend to prevent the growth of any contaminating or putrefactive organisms, and still not interfere with the bacteria in the deeper layers of the tissue, and the specimen will not dry out as it does when sent in borax.—C. A. Z.

Anemia Probably Swamp Fever.

I am sending you a sample of blood taken from a four-year-old gelding, weighing about 1500 pounds, which had symptoms of blind staggers, for which I bled him. You will notice that the blood-clots are very pale. I should say they showed a lack of hemoglobin or red corpuscles.

This horse when purchased was quite thin, but picked up very rapidly under the care his new owner gave him. My attention was called to his trouble about two weeks ago, at which time he showed a faulty nerve control of all four limbs, such as stubbing his toes, knuckling over, dragging his feet, etc.

His condition seemed to be improved by regular work, but lately he has been turned out to pasture and his trouble has become worse. He acts much the same as a cow with milk fever. He fell over before I was called, and was unable to rise for a while. He had a full pulse, which indicated bleeding, but I didn't think this helped him any, although it relieved the blood-pressure.

Any information you can give me would be greatly appreciated.—P. F. S., Wisconsin.

Reply: This specimen of blood revealed conditions exactly the same as those described, and, being in a districmt where swamp fever is fairly common, the natural conclusion is that that is what you have to deal with.

The use of flavisol intravenously in this ailment is experimental only, but it gives some promise of being very satisfactory.—C. A. Z.

Mixed Infection.

Am sending specimens of lung, kidney and liver of a hog for laboratory diagnosis. This hog was one of a herd which had been sick about a week. I posted one and found nothing unusual except that the lungs were affected. The animals just lie around and die; there is nothing wrong in the bowels; they run a temperature of one degree.—L. J. S., Iowa.

Reply: The kidney showed a few pin-point hemorrhages immediately under the capsule, and the entire section of lungs, which you sent, showed pneumonia with two small pus pockets. Bacteriological examination did not show the presence of any pathogenic bacteria, so we cannot definitely say what the causative organism was. However, it appears highly probable that there was a mixed infection, but its nature could not be determined due to the organisms having died.—C. A. Z.

Hemorrhagic Septicemia Bacterin Indicated.

Am sending specimens from a young steer that died suddenly after being sick less than twenty-four hours. Two died yesterday and two more in the herd are sick. I did not see those that died until after death, but there were no swellings on the body, no changes in the intestines. The two which are now sick are breathing rapidly; the temperature of one is normal, 102.5° F. Neither seems to be in distress, aside from the breathing. I wish you would make a laboratory diagnosis. There are thirty-five head of cattle in this herd.—R. C. B., No. Dak.

Reply: Bacteriological examination of the specimens shows the presence of Bacillus bovisepticus. Consequently, we believe that the cattle referred to died from the peracute form of hemorrhagic septicemia and that a bacterin made from this organism is indicated.—C. A. Z.

Queries and Answers

Johne's Disease Probably Cause of Death

Some time ago I sent you a sample of feces from a cow with diarrhea for bacterial examination. The examination however, proved negative, but I was notified by the owner that the cow had responded nicely to my treatment of nux, sulphocarbolates and coffee, and was all right. A month later, however, he called me and said a relapse had occurred, the cow had emaciated almost to nothing and had been destroyed. He also stated that another cow had developed similar symptoms, this making the eighth cow to go the same way in two years.

Upon my recommendation this cow was destroyed and posted in the presence of four veterinarians. Every organ was normal except the small intestines, which showed every indication of chronic inflammation from one end to the other. They were practically empty, containing only a small amount of slimy, yellow feces.

The stomach, however, contained normal, though slightly dry grass. The contents appeared to have remained in the stomach longer than usual.

Bacterial examination of the small intestines and contents proved negative to all pathogenic bacteria. These cows had been tested for tuberculosis every six months for the last two years with negative results.

The symptoms were: Loss of appetite to a large degree; watery diarrhea; pulse rapid and thready; rapid emaciation; temperature remained normal; hide bound and coat stary.

Could any vegetable or mineral poison have caused these results?—W. E. C., Maryland.

Reply by Dr. F. B. Hadley, University of Wisconsin: From the history of this case and the lesions found at the postmortem examination, I am strongly inclined to believe that the animal was affected with Johne's disease, or chronic bacterial dysentery, as this affection is often termed. This diagnosis would be further supported if the intestinal mucosa was found to have been corrugated in appearance and the bowel wall greatly thickened. In our experience the ileocecal valve is always markedly congested in Johne's disease. This change is so constant that we have come to regard it as pathognomonic. It would be interesting to know if this condition was present.

It is not surprising that a microscopic examination of the feces failed to reveal the specific acid-fast Johne's bacilli, as these can seldom be demonstrated, except in material taken from scrapings of the intestinal or rectal mucous membranes from the mesenteric lymph-glands.

Since Johne's disease is communicable, it would be desirable to test the other animals in the herd to ascertain whether any are infected. This can be done by a diagnostic test fluid known as Johnin, which is prepared and used in much the same way as is tuberculin. However, it is injected intravenously rather than subcutaneously. The veterinarian must start taking the post-injection temperatures almost immediately, as the reaction fever may appear very promptly and subside quickly. Enough Johnin to test a few cattle may be secured from the Veterinary Department of the University of Wisconsin, Madison, Wis. So far as the writer knows this diagnostic agent is not offered for sale by commercial firms.

Chorea in Dogs.

I have a case of chorea in a dog that has not responded to any treatment. What can you suggest that might help?—C. C. S., Michigan.

Reply: The most satisfactory treatment for chorea in dogs consists of the administration of Fowler's solution of arsenic in increasing doses, as follows:

Starting in with, say, a three-minim dose, three times daily, diluted with one-half or one dram of water or milk, for three days. Then, four minims three times daily for three days, and increase one drop per dose every three-day period, running this dosage up without limitation, except upon manifestations of toxic symptoms, which will be manifested by itching or edema of the eyelids. Itching of the eyelids will be demonstrated by the dog rubbing his paws frefrequently over his eyelids; or diarrhea and excessive thirst may be an early symptom of toxicity.

Should toxic effects be shown, the drug should be withheld for five or six days, and then given in a considerably decreased dose, though not as small as at the beginning, and then increased again.

Recovery is usually slow, requiring from three weeks to three or four months.

For those cases that show a multiple neuritis, as manifested by pain, the dog howling or whimpering, or sleeplessness, in addition to the arsenic treatment, administer phenacetin in from three to five-grain doses every four hours, according to the age and size of the dog. This should be continued as long as such symptoms are shown.

Acute attacks of chorea are invariably fatal, regardless of the treatment.—E. L. Q.

Rachitis and Intermittent Luxation of Patella.

I was recently called to see a two-year old colt that was in a very weak condition. The owner said that he had brought the colt from the pasture where he had been running since early in the summer and he did not know there was anything wrong with the animal until he went to get him.

The animal seemed to have no use of his hind parts. When I attempted to move him, his hind legs seemed to be glued to the ground, but after a time he managed to use them, and after such attempts he can walk better. After lying down, he is able to get up, but with difficulty. He eats well; bowels and urine in good condition; temperature 101.6°; pulse 37; respiration normal, except during attempts to get up in the morning.

This is all the history available. There is no fracture of the pelvis. Will you kindly advise me what your diagnosis would be and advise treatment?—I. W. M., Ia.

Reply: The first diagnosis simmers down to two probable ailments: First, parasitism, more likely invasion by the strongylus armatus, especially causing a thrombotic condition in the colic artery, which of itself leads to great emaciation. Later on, this thrombosis could invade the arteries of the hind limbs and account for the great weakness in the hind extremities and difficulty of locomotion; but if this were so, the condition would be persistent and not of an intermittent character, such as you describe.

My conclusion is, that the colt is suffering from rachitis, and that the condition you describe in its hind legs is due to intermittent luxation of the patella. The latter condition is quite an important factor in rachitis in colts and in certain breeds of dogs.

The diet should consist of food large in mineral matter, such as the best oats, whole corn, which, however, may be crushed if necessary at the time of feeding, and some bran and hay, timothy preferred, or alfalfa.

For medicinal treatment, put him on the following: About two dram doses of precipitated phosphate of lime, mixed with his food three times daily. If he is anemic, give him one-dram doses of phosphate of iron three times daily. Fruit acids are also of value in this disease, and in the equine, we would recommend the addition of some apples to his diet.

The recovery may be hastened by the addition of about thirty grains of desiccated thyroids administered three times daily. This latter may be procured in two-grain tablets. However, as this runs into some money, in place of it, you might give the colt small doses of iodid of potash, say twenty grains three times daily. The thyroidin which exists in the thyroid gland, or the iodid of potash aids in promoting favorable metabolism, or in other words, promotes the taking up by the organisms of the necessary mineral matter from the food and the medicaments.—E. L. Q.

Carbon Disulphid Most Efficacious Bot Treatment.

I would like to secure an efficient bot treatment for horses. I have tried carbon disulphid in two-dram doses, three doses two hours apart, on an empty stomach, followed with a physic of oil. This does the work, but it seems a very severe treatment. Patients have had colicky pains following it, and some animals appear to be dull, refusing feed. It seems to interfere with their digestion.

Do you know any drug that could be mixed with the carbon disulphid to moderate the after-effects? My druggist and I wish to put up an efficient bot cure to compete with some cures that are being sold in our district by the laity. Any help that you can give me will be welcome. —M. H. T., Manitoba.

Reply: We regret to say that the carbon disulphid treatment is the best and so far, the only really efficacious treatment known for bots. Its objectionable features lie in its irritating properties. Fatalities may, and have occurred, due to capsules containing the drug being broken in the throat or mouth.

In order to reduce the danger of gastro-intestinal irritation to a minimum, at least a pint of oil should be administered immediately after each dose, or immediately before. I believe liquid petrolatum or mineral oil to be far superior to linseed oil for this purpose.

Some claim more efficient results are obtained by administering the entire amount of the drug,

say four to six drams at one dose, immediately followed or preceded by at least a quart of oil, and here again I would recommend the liquid petrolatum or mineral oil, the latter drug, the mineral oil, not being absorbed, will more fully protect the gastro-intestinal mucosa than linseed oil which, to a considerable extent, is absorbed.

In regard to proprietary bot cures, these consist principally of purgatives and, of course, at almost any time, any purgative will remove bots, i. e., those that happen to be loose from the mucous membrane, and this causes the laity to believe that the animal is being benefited by it, but these remedies do not remove the entire mass of bots as does carbon disulphid.—E. L. Q.

Myrrh as a Wound Application.

What does balsam of myrrh, the proprietary article, contain, or what is similar? It is used by blacksmiths for burns, cuts and sprains.—C. M. H., Wisconsin.

Reply: We do not know of any proprietary article by this name. If there is such a preparation, it must be a local preparation, not on the general market.

There is an oil of myrrh—myrrhol—which is sometimes erroneously termed balsam of myrrh.

As for something similar, the oil of myrrh will fulfil all requirements, or you may use equal parts of tincture of myrrh and balsam of Peru. Balsam of Peru is somewhat expensive, but a very little of it will go a long way if properly used. When prescribing this substance, I usually prescribe one-half to one ounce and insist on the client using a small bristle brush to apply it to the wound or ulcer instead of pouring it on, thus avoiding waste.

You will find the balsam of Peru a splendid stimulant for slow-healing sores or ulcers.—E. L. Q.

Aphrodisiac Indicated.

I am treating a valuable boar weighing about six hundred pounds, which, although not lacking in sexual desire, is unable to breed, due seemingly to insufficient erection of the penis. This is his second breeding year. He was a good herd boar last year and very prolific. He was not overworked at any time.

Do you think an aphrodisiac indicated here? What would you recommend as most efficient?

I can obtain Elixir yohimbehe compound at $10 per pint. What is the dose for this for man or different animals? For this particular boar?—A. C. B., Ill.

Reply: I am quite sure that either the elixir yohimbehe compound will help him, or a preparation known as vetol, which is a trade name for yohimbin, the active principle of the drug yohimbehe, marketed in tablet form by Lehn & Fink, 120 Williams St., New York City, will be found highly satisfactory and will cost only about half as much as the elixir referred to.

Full directions regarding dosage for all animals will be found on the packages of both preparations referred to.—E. L. Q.

Treatment for Sweeny.

Please outline a good treatment for atrophy of the spinatus muscles—sweeney.—C. A. D., Georgia.

Reply: One of the most satisfactory lines of treatment for this complaint is as follows:

First closely clip or shave the hair from the entire affected area. Also clean this area as thoroughly as for a major operation. I would suggest that it first be thoroughly scrubbed with warm water and soap, then again washed with some good antiseptic solution.

Inject into from six to eight places at fairly equal distances apart, about five or six drops of rectified oil of turpentine. Do not use common turpentine.

In order to avoid abscess formation, be sure that your syringe and needle are sterilized and be sure to carry the needle point in until it is stopped by the bone; in other words, make the injections as deep as possible. Superficial or shallow injections give rise to abscess formation.

If you are not familiar with this line of treatment, I wish to remind you of the fact that it will be followed by considerable pain for a couple of hours and considerable swelling of the entire limb. This, however, need cause no anxiety on your part, but you should inform the owner of the after effects. If you desire, a full dose of some anodyne may be given. After-treatment consists in watching for abscess formations, early incisions, if they occur, and treatment as for simple abscess.

Of course, careful examination should be made to ascertain the cause of this atrophy, as in many cases the cause will be found from the knee down. Naturally, in order to make the recovery permanent, the cause will have to be overcome. The above treatment only develops the muscles to their normal condition, but will not eliminate the cause if it is in the lower structures of the limb.—E. L. Q.

Pointed Opinions on Live Topics

By READERS of VETERINARY MEDICINE

Late Reactors to the Intradermal Tuberculin Test.

ANYTHING relating to tuberculin testing, and especially to the intradermic method is interesting to the veterinarian. This test is being used extensively in the work of eradicating tuberculosis, and any data regarding it is valuable. I have used this test on many thousand head of cattle during the last two or three years, and it has proved very satisfactory in my hands.

Without going into details as to the value of the intradermic test in cleaning up infected herds I would like to say a word as to the possibility of late reactors to this test. I have noted in the last few months several articles in which it was stated that many reactors had been found after the customary 7-hour reading had been made. All of us will recall, some time ago, the appearance of many articles reporting late reactors to the subcutaneous test, and we were cautioned to continue taking temperatures up to and beyond the twentieth hour.

As a result of an adequate dosage of tuberculin, used in the last four years, we find the number of late reactors, after the eighteenth hour, is so small that they may be disregarded, except in individual animals which show an increase of temperature at or about the eighteenth hour. If this is true is it not possible that there is some real reason for the late reactors to the intradermic test? Are all of these due to some peculiar idiosyncracy which we know may exist in some few animals, or are part of them due to faults in technic? It would seem to me that there may be some faults in technic.

Late Reactors Due to Faulty Technic.

Most of the writers of the articles referring to the late intradermic reactors have said nothing about the technic used in making the tests reported. One man has given us a rather detailed description of his technic, and notes several late reactors. From his description one must decide that he makes a very superficial injection of tuberculin. He says he uses a long needle, which he carefully inserts into the skin, then gently raises the point of the needle to make sure it is in the right place, and slowly injects the tuberculin. He says that if a short needle is used the tuberculin oozes out at the point of insertion.

> It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

The idea of making a very superficial injection seems to be entertained by many operators. This is probably due to the early descriptions of the methods of making the intradermic test found in text books and pamphlets devoted to this test. Nearly all of the young veterinarians I have coached in making this test make superficial injections. Also others who have worked by themselves for a period of five years or more, making comparatively few tests compared with the man who devotes his whole time to testing, use this method also.

Injection Made Too Superficially Prevents or Delays Reaction.

I have come to the conclusion that an injection can be so superficial that in reality no test is made, or if it is made it is effective at a later period. I believe that this fact will explain some of the so-called late reactors to the intradermic test. My reasoning is that if the tuberculin is merely placed within the squamous epithelium it may, in certan cases, become dried in situ and no real reaction take place. I called one young practitioner's attention to this fact about two years ago, when he was new at the work. I asked him again about this point a few days ago and he told me he was positive that one can make the injection so superficially that no reaction occurs. He has tested several thousand head since I first talked with him on the matter.

Technic.

I use a short needle and make a twisting motion, upward and outward, like picking up cloth

with a needle, and make the injection with one motion. The piston is in the palm of my hand, and as I strike the skin I put pressure on the piston. This pressure serves to separate the two layers of the skin and the tuberculin is thus automatically placed in the right position. There is no oozing of tuberculin, as the twisting motion places it on one side of the point of entrance of the needle. The amount of tuberculin injected makes a lump about the size of a pea, and is plainly seen and felt. We must be sure we get the tuberculin in, and where there is a lump of this size there can be no doubt in our minds. It may not be necessary to use as much tuberculin as I do, but I believe it is best not to take any chances of not making a complete test. At the point of injection we will find a small knot at the time of reading, about the size of the head of a shingle nail. This is the normal condition, and it indicates that the test has been complete.

The position I take in making the injection is behind and slightly to the left of the animal, then I take up the left caudal fold between the forefinger and thumb, giving the fold a rolling movement, and inject just ahead of my finger. In this position one very rarely is kicked, and seldom pricks his finger. The injection is made so quickly that animals rarely move until the operation is complete. I seldom ask any one to hold cows for me, as it is not necessary except when testing some very nervous animals which will not allow you to put your hand on them. I believe that I can place the tuberculin accurately in this way, and it is much easier on the operator and the owner as well as the cow.

If the needle does not actually go through the dermal layer of the skin one will get more definite results from a fairly deep injection. The tuberculin when it is in contact with the true dermal cells will surely react more readily than in the epithelium as the antibodies are more active than in squamous cells about to drop off in the natural process. The tuberculin must come in contact with cells containing antibodies or no reaction will result. There is no doubt that some superficial injections will work as well as the deeper ones, but this is usually due to the character of the skin at the point of injection. As all of us know who have used this test, some animals have thin, moist skins; others have thick, hard, dry skins, and all of these things must be considered in making the injection.

Whether or not the method of injection has anything to do with late reactors I do not know positively, but I believe it may have some influence. While we do not have many opportunities of making later observations on account of the long distances we have to go to make a test, we have had very few late reactors that we know of, but if we left a lot of tuberculous animals in these herds for the reason that we did not see them on the fourth, fifth or tenth days, we would surely expect to get them on our next test. As we clean up herds as quickly as can be expected I believe our methods are good. I think if more care were taken in making the injections, fewer late reactors would be found.

I am sure that nearly all the men in this state in this line of work make a deeper injection. I make a deeper injection than I did at first, and I am sure that my test is more effective in cleaning up herds now than it was at first. I usually make a real clean up on the first test of a badly infected herd. I do not mean that I always get all of the reactors out on one test, but as nearly so as one can expect on any kind of a test used by itself. There are apt to be a few animals in such a herd which have the bacilli in their bodies, but they have not made lesions, or have not established antibodies and so do not react. There are a few with old healed lesions which often do not react to the first test, but on the second test generally do react. Also there are a few individual cases which fail to react on several successive tests. These facts are generally known to the experienecd worker. As a general rule if the herd is kept in line as required by the accredited herd plan and sanitary measures are employed, we get very few reactors on the second test and all of these are in the classes mentioned above. We practically get all the developed cases of tuberculosis on the first intradermic test.

A Pulse Rate of 60 Safe in Pneumonia*

In my experience in treating pneumonia in the horse, I find, as regards prognosis, if the pulse of the horse is at 60 the animal is safe; if it goes to 66 the case is serious; if it goes to 72 it is grave, and if it goes higher than that, the horse will probably die. Of course, there are some exceptions to this. No horse ever dies of pneumonia with a pulse of 60, so if he dies from pneumonia it will be because his heart has grown weaker, and the weakening of the heart invites, induces, promotes and produces filling up of the lungs and consolidation, so that consolidation takes place immediately and directly invariably from weakness of the heart.

A. H. BAKER, V. S.
Chicago, Ill.

*Read before the Indiana Veterinary Medical Association, Jan. 10, 1918.

Therapeutic Suggestions.

Never prescribe potassium iodide internally concomitant with the use of calomel in the eyes. Sloughing of the eye is almost sure to follow, due to the chemical union between the two drugs in the eye, forming the irritating yellow iodide of mercury.

Never use any of the coal tar antiseptics on cats, even a ½ of one per cent compound cresol solution applied to a cat's skin will kill it. When used as a disinfectant, if the ventilation is poor, death to cats frequently results, and even if the ventilation is good the animal commonly is made very ill or at least is nauseated.

Never, no never, use automobile or any other type of cylinder oil as a laxative or intestinal lubricant for horses or other animals, because when you do this you are cheapening yourself and your profession, and besides white rose neutral oil is as safe as the official liquid petrolatum and costs less than half as much as liquid petrolatum or the cylinder oils.

In drenching swine of any age or size, remember, they are easily suffocated if the fluid is administered too rapidly. They must be allowed to "suck" it down and this is best accomplished by one of two methods or some similar method. The neatest is to use a piece of rubber garden hose (about the three-quarter-inch size) and about six or eight inches in length, about one-half of which should be beaten with a hammer until it is very soft and pliable, especially the end which is to go in the mouth, then the hose is slipped over the neck of the drench bottle and the bottle tipped upward very slowly, just sufficient to permit the flow of the liquid, and the hog must be permitted to chew on the hose. The other is the farmer's method, not so neat but very efficacious, and that is to cut a hole, or several of them, in the toe of an old shoe or boot, pour the medicine into the same and allow the hog to chew on the shoe or boot toe as the case may be. If a syringe is used, the fluid must be expelled into the mouth very slowly so that the medicine may be sucked down or strangulation will result.

In administering liquids to young puppies the same precautions advised for swine must be used, i. e., administer them very slowly, and allow the animals to suck them down. If rapidly given, fatalities will occur.

To administer capsules containing irritating drugs, such as oil of chenopodium, to swine, safely, the best advice is—Don't. It is best to give such drugs mixed with oil such as castor oil, liquid petrolatum, linseed oil, etc. But if you will use capsules with a capsule gun, keep the instrument pressed well down on the inferior surface of the mouth and pharynx, so as to avoid the pharyngeal fossae or recess, in which the capsule may lodge, open and free the drug and cause a fatal inflammation or gangrene.—E. L. Q.

Application for Exuberant Granulation.

Kindly give me a good line of treatment to control proud flesh in neglected wire cuts.—R. C. B., Iowa.

Reply: If the wound is not moist, it should first be moistened with sterile water and the following powder applied:

℞ Hydrarg. Chlor. Mitis
Cupri Sulph. Pulv.
Camphorae Pulv.
Alum Exsic.
Zinci Oxidi āā ʒ ij
M
Sig. Apply two or three times daily.

You will find the above prescription to be superior to any form of caustic treatment for removing exuberant granulations; by virtue of its intense astringency, it virtually starves away the granulations and they do not return, as they commonly do under caustic treatment.—E. L. Q.

New Operation for Paraphimosis.

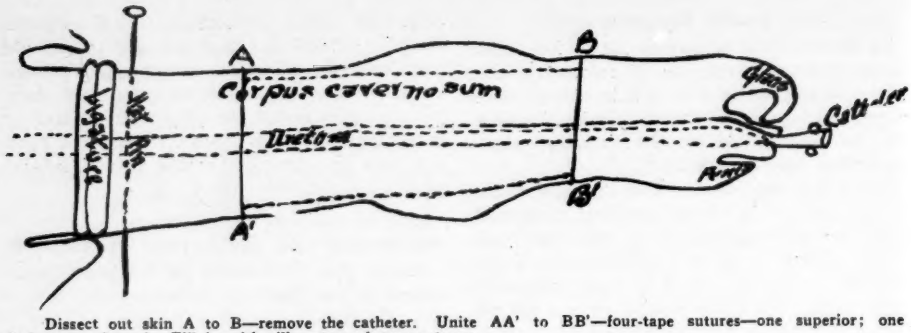
On page 580 of the December journal, in the article entitled "A Stubborn Case of Paraphimosis," allow the writer to suggest a surgical operation that will correct the condition.

The article in question describes a true case of paralysis of the penis, and the "Adams reefing operation" should be performed, to secure the best possible results. The writer knows, because it has been done in twenty or more cases, and has never failed.

There is no reason for amputation and its accompanying stenosis, much less the loss of time in awaiting the results of palliative measures. Perform the operation, as I shall describe it, then let us know the results in VETERINARY MEDICINE.

Technic: Prepare, cast, chloroform, wash the penis and sheath. Insert the catheter, fix to prevent its slipping out. Stretch the penis. Pass a sterilized hat pin through the penis close up to the sheath. Insert rubber tubing behind the hat pin to control hemorrhage. This is not strictly necessary as there is very little bleeding.

Operative Technic: Dissect out the cuff of skin, equal to one-half the length of the entire



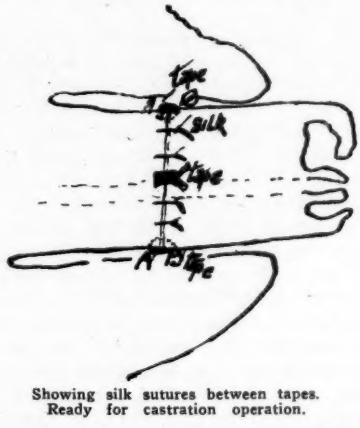
Dissect out skin A to B—remove the catheter. Unite AA' to BB'—four-tape sutures—one superior; one inferior; two lateral. Fill in with silk sutures between tapes.

protrusion. First incision, point BB' in cut, just one or two inches behind the glands. Second incision, AA'. Remove only skin and subcutis between AA' and BB'. Remove catheter. Suture AA' to BB' with tape—one suture superior; one suture inferior; one suture on each side. Put several silk sutures between the tape to close the wound. Remove the pin and rubber tubing. Apply light cotton pack and a loose bandage for several hours. When the animal regains his feet apply a suspensory.

Very little after-treatment is needed; in fact the writer has even neglected cases, yet results were excellent. Contraction of cicatrix allows the penis to protrude from the sheath about an inch, thus preventing high urination in the sheath.

MEDICUS VETERINARIE.

Philadelphia, Pa.



Showing silk sutures between tapes. Ready for castration operation.

Intramascular Injections of Mercuric Iodide in Treatment of Pneumonia.*

By J. Cardas, Veterinary Major 1st Class, French Army.

Infectious pneumonia being but a localization in the course of the evolution of a general infection, the author conceived the idea of intervention with a general antiseptic. After the war of movement changed to that of more or less permanent occupation and animals were as a consequence sheltered in closed quarters, infectious pneumonia (stable pneumonia) began to make its appearance. Isolation of the affected animals always promptly controlled the enzootic, and out-of-door treatment and the classical medication brought the usual results: some cures, some fatalities and always a slow convalescence which kept the subjects from work for a long time. In view of this long period of enforced idleness it was thought advisable to attempt a general antiseptic treatment. Biniodide of mercury being the only agent available, it was given a fair trial. In a series of recorded experiments it was found that great benefit was derived from intramuscular injections of the drug whether given in the premonitory, congestive or exudative stages of the disease.

Exclusive of all other medication the temperature always dropped on the day following the injection and a concomitant improvement was also noted in the other symptoms: the appetite improved, the mucous membranes clarified and the patient brightened up manifestly. On the fifth day the temperature was normal and often on the seventh day the patient was ready to be shipped, a fact that cannot be recorded with other forms of treatment.

The author opines that the treatment prevents the incubation of pneumonia by reducing the virulence of the microorganism whose cultures in series become so virulent, causing at first only an angina but soon becoming capable of producing pneumonia, pleuropneumonia and even certain forms of septicemia.

*Revue Generale de Medicine Veterinaire, Nov. 15, 1920.

The drug is administered in solution as follows:

Biniodide of mercury, 1 gram (about 15 grains)
Water, 10 grams (about 2½ fluid drams)
Potassium iodide, qs. ft. sol.

The dose is from one to two cubic centimeters (15 to 30 minims of the solution, equivalent to 1½ to 3 grs. of the red iodide of mercury) injected each day deeply into the muscles until the temperature is normal or approaches normal. The injections are made with a needle of sufficient length to penetrate the muscles. The point of election is the buttocks where the connective tissue is firm enough to assure the penetration of the needle beyond the subcutem. The pectoral region was sometimes used, but here there is a slight swelling produced that is not observed from the buttocks injection. The swellings are, however, benign and transient.

Although used since September, 1915, exclusive of all other medication not a single fatality has resulted.—L. A. M.

Forage Poison Yields to Hemorrhagic Septicemia Bacterin.

I have just read the article, "Glonoin Contra-indicated in Congestion of Kidneys and Lungs," by G. E. S., on page 596 of the December number, in which he describes a case, the prominent symptom of which was bloody urine, and which he diagnosed as congestion of the kidneys.

I wonder if the Doctor wasn't dealing with forage poisoning. I had a case very similar to his in an eight-month-old Holstein show heifer, which was brought to the fair for exhibition purposes and four nights later became very ill. When I saw the animal about 7:30 p. m., she had a temperature of 102° F., and was bleeding from the nose and voiding blood in the urine. Respiration was labored. Auscultation elicited no rales, although they may have been present and were not audible because of the noise in the stable. The animal appeared to be in distress and stood most of the time with its head down.

I at first suspected hemorrhagic septicemia, as it was prevalent in that locality, but the low temperature caused me to hesitate in diagnosing it as such. In order to play safe I gave the animal an injection of hemorrhagic septicemia bacterin, followed by treatment for indigestion. Four mil of hemorrhagic septicemia bacterin administered hypodermatically, was followed by a mixture of iron sulphate, aqua ammonia and water per orum. I then mixed up a solution of eight ounces of mineral oil, one-half ounce of oil of turpentine, one-half ounce carbo-camph and one-half dram fluid extract of nux vomica, to be given by the attendant an hour later, with orders to remove all food from the stall.

When I saw the animal the next morning at 8 o'clock she was walking around in the stall looking for something to eat. The bleeding at the nose had ceased, and the attendant said she had passed urine which was clear, about an hour before.

Examination showed the animal to be normal in every respect. I decided that the condition had been due to forage poisoning, although examination disclosed nothing wrong with the food. L. G. HART.

Chippewa Falls, Wis.

Pig 208 Days Old Weighs 308 Pounds.

An unusual incident of rapid growth and fattening of a pig is reported by the Ohio Experiment Station.

One pig used in experimental work weighed 3.7 pounds at birth; at the time the test was completed the pig was 6 months and 24 days of age and weighed 308 pounds, making an average daily gain of 1.46 pounds.

At the weight of 87 pounds the pig was started on a 105-day feeding test in which it gained 2.1 pounds daily.

Besides rape pasture, the feed consisted of corn 14 parts and tankage 1 part, by weight, when the test was begun; when the pig reached a weight of 125 pounds a ration of corn 19 parts, tankage 1 part, was fed.

Meningitis in the Dog.

Acute meningitis consists in an inflammation of the pia mater and arachnoid, chiefly the former in the small animals.

Meningitis is not of frequent occurrence in the small animals, but it may occur at any age. It sometimes complicates other inflammatory diseases. In the few cases I have seen, meningitis was derived by contiguity of tissue from disease in the neighboring parts—diseases of the ear—and was designated as secondary meningitis. The primary form I have never observed.

Injuries of the cranial bones, as fractures, severe blows, or punctures, are also exciting causes. In fact, any severe injury, or suppurative inflammation occurring outside the dura mater, but in the immediate proximity, may by extension cause meningitis, but the most common cause of this type is purulent otitis. The external discharge of pus from the ear usually ceases when the meningitis begins.

Septic processes in any part of the animal body may occasionally cause meningitis, probably from microbes, which, entering the circulation, are conveyed to the meninges, but such occurrences are rare.

The pathological anatomy differs considerably in different cases, but is characterized essentially by dilatation and hyperemia of the vessels of the pia mater, followed by purulent and fibrinous exudation. The first visible evidence of inflammation is congestion, which assumes a patchy character; to this, more or less opaline effusion into the subarachnoid tissue soon succeeds; and presently the corpuscular and other solid products of the morbid process begin to accumulate.

The inflammatory process, which is mainly limited to the substance of the pia mater and to the subarachnoid tissue, nevertheless affects to a greater or less extent, the neighboring arachnoid, on the one hand, and the cortex of the brain upon the other. Inflammation may involve any part of the pia mater and spread over it; indeed, meningitis and other forms of inflammation have a marked tendency to diffuse superficially. If the disease be protracted, which is rare, the exuded substance may undergo further changes, such as occur in simple exudations in other parts of the system.

Although the above remarks relative to the anatomical character of meningitis are applicable to only a few cases, I must confess that I nave been disappointed at the few autopsies of animals that died with all the symptoms of meningitis, in not finding more lesions.

The affection being so rare, the author can do no more than relate his observations as to symptomatology with a few notations from notes, lectures, etc.

There may or may not be a prodromal period, characterized by vertigo and vomiting, but the real onset of the disease is rather sudden, and, like other acute inflammatory diseases, begins with a decided chill followed by high fever—more intense and sustained than in other cerebral maladies. The pulse may be 100, the temperature 103° or 105° F.; the eyes are injected and swollen. The animal in whom meningitis is developing will be noticed by the owner to lose his accustomed vivacity. A quiet, subdued appearance will be noted for a short time, followed by fretfulness, without apparent cause. Unexpected and loud noises and bright lights are evidently painful to the animal.

The appetite is capricious. After taking a few mouthfuls of food, hunger seems appeased and the animal will take no more. The bowels are regular or inclined to constipation.

Unless the prodromic period be of short duration the effect of imperfect nutrition is obvious before it closes. The flesh and skin become soft and flabby, or emaciation is present. The animal loses his strength, standing or walking becoming difficult.

The duration of the disease is variable. In slight cases the diagnosis is always doubtful, and the serious symptoms may rapidly subside.

Another notable feature is the variation in temperature. Coolness of the body and limbs may be followed by a sudden rise in temperature. In severe cases, consciousness may be lost at an early period. On the other hand, I have known it in a case of moderate severity to remain, though partially obscured, till within a few hours of death. Sometimes the first perceptible deviation from the normal state is an inequality in the size of the pupils, while in others oscillation of the iris is observed. Later, after convulsions have occurred, the parallelism of the eye is lost. As death approaches the eyes become bleared and puriform secretion collects in the inner angle of the eye and between the eyelids. This secretion, while not abundant, is, as a rule, sometimes sufficient to unite the lids. The sense of hearing is probably lost as soon, or nearly as soon, as the sight, but the sense of touch continues for a longer period.

In the first stages of meningitis the pulse may be accelerated, or it may be almost normal for hours and afterwards accelerate. After a few days the pulse undergoes a marked change; it becomes slower and at the same time irregular.

The irregularity usually consists in an intermittence of the pulse after each five or six beats. At times the force varies, a feeble pulsation being succeeded by one of greater volume and strength. The degree in the frequency of the pulse cannot fail to attract attention. At an advanced period, as death approaches, the pulse again becomes accelerated and feeble. The change in respiration is as marked as that of the pulse. At the onset of meningitis the breathing is moderately accelerated in some animals; in others it is natural. Two or three days later a marked alteration occurs in the respiratory movements. Breathing is irregular, intermittent, and accompanied by sighs. The change in pulse and respiration corresponds with the loss of consciousness, and shows that the brain is becoming seriously involved.

Another symptom noted is a peculiar whine or cry. At intervals without being disturbed and without any change in symptoms, the animal utters a sharp whine or cry, and immediately relapses into its former state. This cry is noticed

more frequently in the early part of the disease, and its absence has no marked portent. The small amount of urine passed sustains an important relation to the progress of the disease and the therapeutics.

The symptoms described are such as I have observed and have gathered from different sources, and as nearly as possible in the order I have endeavored to indicate. But no description applies accurately to all cases. Meningitis may be so rapid and violent that both the character and succession of symptoms are different from those indicated.

It is of the utmost importance to diagnose meningitis in small animals, in its first stages if possible, since treatment to be successful must be begun early.

In the absence of well-marked initial symptoms it is many times impossible to arrive at a diagnosis at once. More than one protracted visit may be required to remove doubt as to the exact pathological state. On the other hand, the sudden appearance of cerebral symptoms in the midst of health, and their rapid increase, may allow of an early diagnosis. When the eyes become affected, the respiration and circulation irregular, and especially when convulsive attacks begin, diagnosis is easy.

The prognosis of meningitis depends upon the symptoms and severity of the attack. In some cases we cannot, from the nature of the disease, be certain that the diagnosis is correct. Sometimes even in the second stage, treatment properly employed is attended by amelioration of symptoms. Though such improvement may serve in a way to encourage the veterinarian and the owner, it should not be the basis for a favorable prognosis unless it continues three or four days. Apparent improvement for a few hours or a considerable part of a day is not unusual in animals which finally die.

The symptom which I have found to be the most reliable evidence of the near approach of death, has been the gradual weakening of the pulse with more frequent beats, though other symptoms remain unchanged. This change in the pulse is usually very apparent during the last ten or twelve hours of the animal's life.

Complications render the prognosis more doubtful. It is most unfavorable in the secondary form, as far as my own observations have reached, with one exception. The favorable termination is ushered in by a rapid lowering of pulse and temperature. Persistence of profound coma, and continuous temperature elevation leads to an extremely grave prognosis.

Such remedial measures should be prescribed during the premonitary stage as are calculated to relieve fretfulness and irritability. Measures to diminish the pressure of the blood in the vascular system should also be employed. The animal should be immediately placed in a darkened room, and all disturbing influences eliminated, and the head subjected to cold applications.

Narcotics should be reserved for those cases in which convulsions are present. The two remedies upon which we must chiefly rely are the iodid of potassium and the bromid of potassium or sodium. While the bromid quiets the restlessness, prevents convulsions, and diminishes the hyperemia, to a certain extent, the iodid is useful as a sorbefacient, and it probably has some control over the inflammation. The iodid and bromid may be given together or separately, but the former is recommended by the writer. At the same time the bromid should be given in doses twice as large as that of the iodid, if the indications for its use are present, i. e., great restlessness, and symptoms which threaten convulsions. If the animal's condition does not soon begin to improve with such treatment, there is, in my mind, no remedy. If convulsions occur, the bromid should be given every half hour till they cease. If this treatment does not control them, an injection, per rectum, of three to five grains of chloral hydrate in a teaspoonful of water should be administered also.

In the stage of coma and collapse, all medication should be abandoned, and the animal should be stimulated and nourished. My guide to the employment of stimulation is the effects which they have upon the pulse and temperature. If they tend to bring both nearer to normal, I continue their administration. I firmly believe that many animals die from lack of stimulation in disease crises, especially in inflammatory conditions. Brandy and whisky are preferable to port and sherry wine, but the latter is preferred by the writer for the cat and toy breeds. All stimulants should be given often but in small doses and in combination with systematic fluid feeding at short intervals—beef tea and milk to which a raw egg well beaten has been added are my standbys.

The above is not to be taken as conclusive, as the affection needs careful study.

OSCAR SCHRECK, V. S.

New Haven, Conn.

Serum for Foot-and-Mouth Disease.

A recent report of the Paris Society for Biology states that a serum which will cure foot-and-mouth disease in four days has been discovered by Dr. Andre Cepede.

Antiseptic Mammary Injections Urged.

I notice in the October issue a query in regard to mastitis in cows, and Dr. DeVine's reply thereto.

I presume the treatment given is what the doctor uses as a general routine procedure in mastitis cases. Although there are several forms of mastitis, the treatment advised by authorities are more or less the same for all.

Doctor DeVine does not mention antiseptic mammary injections. It is this that has prompted me to write. Although I have seen quite a few articles, advising against their use, still in spite of this, for several years I have been employing this method for all forms of mastitis with better success than with drugs by month.

To me this seems a rational treatment, for we get the medicament, if not always at, at least near the seat of the trouble. Now wait, the objectors will say, but you can not force it into the depths of the gland. Probably not; however, is this necessary, or even advisable? Will not absorption be sufficiently active in most timely cases?

I use a three per cent boric acid, sometimes a soluble iodin solution, injecting half to one pint and repeating in three or four days. This is nothing new. Although I am very partial to hot fomentations for many conditions in animals, experience has convinced me that its use in mastitis, at least in cows, is wrong, because contiued external heat applied to a diseased mammary gland results in decomposition and further clotting of any secretion that may be present, just what one does not want.

I recommend massage, however, not usually during the first few days, and the application of turpentine and sweet oil, equal parts, rubbed in daily. Camphorated oil, belladonna solutions are not advised, as they dry up the gland.

Use of a suspensory, occasionally, frequent stripping and usually an initial dose of salts is about all we use in connection with this treatment. I have been able to cure (by cure, I mean bring them back to proper milking condition) about two, sometimes three out of five. Prior to using injections, I don't believe I cured more than about one in five.

Formalin occasionally worked nicely. Phytolacca, so much lauded and thoroughly tried, never seemed of any value. Bacterins, ditto.

(Photo from Wide World Photos)

Anesthetizing a dog preparatory to operation upon him for hernia, in the dispensatory of the New York Women's League for Animals. This is one of the most elaborately equipped veterinary infirmaries in the country. In it horses, dogs, cats, monkeys and even canary birds receive treatment for their ailments in the animal hospital.

Several years ago, our State Department recommended formalin for acute alfalfa bloat in cows. In these cases, don't tap. It doesn't help. But, give by mouth, one-half ounce of formalin in a quart of cold water. In a little while the cow is relieved and on the road to recovery. Always after a few hours, follow up with a dose of salts to prevent constipation from formalin.

Since prohibition became effective, night calls seem to have dropped off considerably. Before this event, people went about more at nights and on returning home would give their animals another lookover before getting under the feathers; they would also sit up, or get up to see how old Brindle was doing, and would solace themselves for their trouble with a nip from the little brown jug and feel well satisfied with themselves and things in general. Now they are a grouchy, sleepy lot and are hard to draft into sick animal service. —H. W., Wisconsin.

More About Milk Fever.

In re the article by A. L. W., Kansas, on page 608 of the December issue, the symptoms and history of the vase would lead one to suspect parturient paresis.

During my nine years of practice in northwestern Arkansas I have observed and treated a great many cases of parturient paresis or milk fever. I have found that there are four classes of the disease as ollows:

Class 1. The cow will go down without showing any, or, at least, few symptoms of illness, and very soon will be in a comatose condition. Class 2. The cow will stagger about from a few hours to two or three days before going down or refusing to eat. Class 3. The cow will move in a circle, licking her side or will chew on sticks, the side of the manger, bucket or other object. In a few hours she will fall and show evidences of great distress. Class 4. The cow will fall or go down, but will continue to eat. The milg flow decreases; the animal will still be able to get up. I have seen such cases continue in this way for a period of ten days or two weeks or have had such history from the owner. In this class the veterinarian should be very reserved as to his diagnosis.

One case may be uncomplicated arturient paresis, while the next case with similar or modified symptoms, may have a retained placenta or a portion of the placental membrane.

One should always make a point of examining each case thoroughly, as this has been a stumbling block to many practitioners. The cases recover in many instances but the response to the treatment is slow.

I am of the opinion that the case mentioned by A. L. W. belonged to Class 4. I had two such cases last week. The owner called me saying the cow was ailing and had gone down. While I was on my way to his place, he succeeded in getting the cow up. Diagnosis was milk fever. Recovery followed treatment.

I had another case with the same symptoms, occurring four weeks after calving. Examination disclosed a slight discharge from the vagina. I suspected retained placenta. On examining the vagina, considerable putrid fluid escaped. After the usual treatment the cow recovered nicely. E. L. SIDLE.

Fayetteville, Ark.

Traumatic Inflammation of Stomach and Pericarditis of Cattle.

Being in a fruit-raising district, we probably have more of these cases than the veterinarian in the open or diversified farming districts, due to the fact that the orchardist farmer stables his cow or cows in, or under his packing shed. The farmers use these sheds for the making of boxes for their fruit, and incidentally, box-nails frequently fly from the hammer, or fall on the floor, and in either case it is possible for them to get in the feed, which in all probability is stored in one corner of the floor. Especially is this true where the floor above the cow stable is used for the making of boxes, for the nails very frequently will fall through the slots of the floor and get into the feed, such as hay in the manger, or hay stored to be fed later.

We have another condition worthy of mention, which occurs where bailed hay is being fed. Men who feed bailed hay use various instruments for cutting the wires that hold the bail together, the worst of which is the hatchet. By this method of cutting the wires, the wire is not cut by the first stroke in many instances, and when two or more strokes are used, there is danger of the wire being cut in two places, the short end breaking off at the last stroke of the hatchet, thus the dangerous two-to eight-inch piece of wire is in the hay.

Traumatic Inflammation of the Stomach.

This condition is not often diagnosed except that animals so affected have chronic indigestion. A characteristic symptom is pain, especially when the animal is exerted, such

as sudden exertion from fright, or when being chased around in the paddock. Also notice the tendency of the animal to stand or browse with the head up hill where it is possible to do so, and pain on pressure of the second stomach (reticulum).

Case Report No. 1. Jersey cow, age six years, in poor condition and subject to indigestion. The owner phoned stating that the cow had another bad spell (I had taken care of her two months before). On arriving at the ranch I found the following condition: cow down; on getting her up, which required considerable effort on our part, she groaned and showed evidence of great pain, standing on her hind legs and resting on her knees in front until she was made to get up; temperature 100 degrees; breathing labored, visible mucous membrane anemic; rumen impacted; swelling and soreness of parts directly posterior to sternum. The owner stated that the cow was due to calf.

I had told the owner that a foreign body was suspected, but in the meantime we would do what we could, which consisted in giving a cathartic followed by stimulating medicine, also leaving the impression of an unfavorable prognosis.

Two days later the owner phoned saying that the cow had her calf, and had cleaned (placenta), but that she could not get up. I went out and found the cow in such an exhausted condition that we advised having her destroyed, which was done the following day.

Autopsy: Incision of the abdominal wall disclosed the reticulum and part of the paunch adhered to the abdominal wall, so we removed the upper-most fore leg, cut the ribs along the backbone, thus exposing the thoracic and abdominal cavities. The reticulum and lower parts of the diaphragm were involved in an extensive abscess, in the center of which was an eight-penny nail. Posterior to this abscess we found three smaller abscesses, approximately four inches apart, on the floor of the abdominal cavity; also a large abscess on the liver.

Case No. 2. Registered Holstein cow, age four years, condition excellent, and a very good individual. I cite this case because it differs from the ordinary case of traumatic pericarditis, in that I was called to deliver a calf. On arriving at the dairy I found this particular cow had been in labor for sixteen hours, that is, I was told so by the man in attendance, which I doubted, as we delivered a living calf in half an hour. The following day I went back and removed the placenta, and during the process she strained considerably. Three weeks later I was called back to see this cow, and I would not have recognized the animal, she had so fallen off in flesh. The owner had given her a cathartic with good results, two days before calling on us, yet she did not respond. We found a temperature of 104°; breathing accelerated; anxious expression of eyes; head held low and in a straight line with the body; swelling of a doughy character on dewlap and sternum; the jugular veins full and well defined; and when the animal was made to walk, her movements were carefully and stiffly performed. I told the owner I was sure that the cow had swallowed a foreign body such as a nail or a piece of wire, and that there was nothing I could do for her. His answer was, "Doc, why in hell should she eat nails or wire? She has always had good feed."

The following afternoon an autopsy was held on this animal, and we found three nails, a small piece of wire free in the reticulum and one finishing nail partly imbedded in the apex of the heart. The heart was greatly enlarged and was covered with a yellow patchy membrane. The pericardial cavity contained about one and one-half gallons of fetid fluid.

We think in this case that the crisis was aggravated or brought about at the time of parturition. In all probability the finishing nail was in such a position in the reticulum, that it punctured it during labor, or at the time the placenta was removed.

Case No. 3. Jersey Bull, valued at $1,500. This animal was sick a week but we did not see him until three days before he died, as the owner, a dairyman, was treating him up to the time he callled on us. He had given him a cathartic and claimed to have secured good results, yet the bull did not improve. When we arrived at the dairy a diagnosis was easy as the characteristic swellings of traumatic pericarditis were plainly to be seen. We told the owner what we suspected, and that there was nothing to be done, so far as treatment was concerned, but to let us know when he decided to destroy the animal (which I advised him to do). The following day he called up, saying that the bull was ready for me to work on.

Autopsy. Findings were similar to that of Case No. 2. There was, however, much more fluid in the thoracic and abdominal cavities, also in the pericardial sac, the fluid in the latter being thicker and having the fetid odor char-

acteristic of these cases.

The causative agent in this case was a piece of bailing wire, five inches long. One end of the wire was still intact in the reticulum, it having a sharp twist, while the sharp end had penetrated the reticulum, diaphragm, pericardium and had worn a fissure-like opening in the heart muscle. It might be of interest to add that, in this dairy the men used an ax to cut bail wires.

P. G. MACKINTOSH, D. V. M.

Yakima, Wash.

How to Control Hog Parasites.

To keep swine healthy and thrifty, provide them with sanitary quarters and a clean wallow, in addition to proper feed. But when external parasites affect hogs an effective remedy must be used if losses are to be avoided. Lice and mange mites are the two principal kinds of external parasites occurring among swine. The mites are particularly injurious to pigs and poorly nourished hogs. "Hog Lice and Hog Mange" is the title of a new farmers' bulletin recently issued by the United States Department of Agriculture, telling specifically how to identify the parasites and describing effective and economical remedies. Plans of hog wallows and dipping vats, together with directions for building them, are given. For information on this important subject, ask the Department of Agriculture, Washington, D. C., for Farmers' Bulletin No. 1085.

A Fundamental Weakness in Animal Disease Control.

I have been very much impressed by the statements contained in the December number of VETERINARY MEDICINE. under the caption of "Notification of Animal Diseases." In this article Doctor Campbell has undoubtedly laid a finger upon one of the weakest spots in the proper control of infectious animal diseases.

In my opinion such a system, if accompanied by a proper quarantine of all reported infectious diseases, would do more to stamp out hog-cholera, tuberculosis, and other diseases of like character than any other one method of control. Let us take as an example the following:

Mr. John Jones presents four head of cattle to a practicing veterinarian for the tuberculin test, his purpose being interstate shipment of the cattle. Mr. Jones owns a large herd of cattle, the greater percentage of which have not been tested. The veterinarian, upon testing the four cattle presented, finds one reactor, which he slaughters, finding lesions. In the majority of cases this closes the incident, or perhaps the reactor is reported to the state department, where it is promptly filed away, and the incident forgotten.

In the above case it is hardly reasonable to suppose that the one reactor found represents all of the diseased cattle in Mr. Jones' herd. Under the present existing conditions, few states have a compulsory testing law, and such owners as Mr. Jones are permitted to dispose of their remaining cattle, untested, to any credulous or ignorant buyers who care to purchase them. As a result, from this one infected herd spring perhaps a dozen infected herds, and the state department or the B. A. I. keep on testing, going around (so to speak) in a merry circle, practically getting nowhere so far as actual eradication is concerned.

These are not fine-spun theories, but conditions as they actually exist over a vast portion of the United States.

CLIFF ACKLEY, D. V. M.

Centralia, Wash.

Takes Issue With Quitman.

On page 593 of the December issue, R. C. B. asks for a successful treatment for scirrhous cord, or so-called "bunches" in pigs. With due respect to Dr. Quitman, who was my ideal when I was a student attending his classes, I will have to take issue with him on his reply.

The only successful treatment, in my opinion, is surgical. I have tried potassium iodide internally, and copper sulphate and corrosive sublimate, inserted locally into the openings or into newly made ones, with the purpose of sloughing them out, but I have come to the conclusion that the knife is the only recourse.

I realize that the potassium iodide would be easier for the operator; but what farmer wants to be administering medicine three times daily to hogs, and in the end secure no beneficial results.

These "bunches" make their apeparance soon after castration or about the time the wound should be healed, and the size of the opening seems to make no difference.

In cutting into a large growth, the bunches will be found to be quite thick, often more than an inch, and fibrous, containing a thick, cheesy pus. Sometimes, in the early stage, simply opening the growths and evacuating the contents will be sufficient. When I operate, I lay the hog on its side on an improvised table

and have two assistants hold the fore and hind legs, the hind legs being held forward as in castration, or the animal may be turned on his back. I make an elliptical incision and include quite a little skin. Often this growth will be found to extend some distance forward in the inguinal region and it is necessary to remove it all or the growth will recur. As an antiseptic, I prefer phenol solution. Use an interrupted suture to close the wound. The mortality is not very high, but you will not be blamed much if it is, as such animals are worthless and an eyesore if let alone. Place the animal in a dry, clean pen for twenty-four hours following the operation.

Emerson, Neb. JAS. R. TAYLOR.

Bowel Fistula a Sequel of Distemper.

The subject of this report was a three-year-old mare, weighing about twelve hundred pounds. From birth she had had an umbilical hernia about the size of a hen's egg.

I received a telephone message one night, saying that this animal had just had an ordinary case of distemper. The submaxillary glands had swollen; the abscess had ruptured spontaneously and to all appearances she was doing fine when suddenly the umbilical hernia began to swell. I was informed that the swelling had ruptured and that the intestinal contents were being discharged through the opening.

The farm being out twenty-five miles from my office over bad winter roads, I instructed the owner to give the animal nothing to eat or drink and that I would come out in the morning.

On arriving at the place the next day, I found the animal standing up and looking fairly well except for the swelling at the umbilicus, which was about the size of a small bowl, with five openings at the base discharging a mixture of pus and intestinal contents. After examining the case, I decided to operate, for as the owner said, she might as well be dead as in the condition she was.

She was led out on the straw yard, and cast in the usual way, the belly was washed as well as possible, which wasn't very well, as the more we washed, the more the intestinal contents would wash out.

The large lump proved to be mostly fibrous tissue partially detached by suppuration, so I decided to remove it entirely, which did not prove to be a difficult task. While cutting off the lump, I encountered another abscess which had not broken. I removed the entire lump.

We could now look right directly into the abdominal opening and see the contents. Luckily, the bowel had united to the margin of the opening, thus preventing foreign substances gaining entrance to the peritoneal cavity. I next took three or four deep sutures with strong catgut and drew the opening together as closely and firmly as possible. I next took six or eight deep skin and muscle sutures, using ordinary strong wrapping twine, inserting the needle as far as two inches back in the healthy skin to make sure they would hold. All sutures were drawn snug, the whole washed and given a liberal painting with tincture of iodin and the animal allowed to rise. She immediately began to eat hay.

On leaving the place, I left directions as to feeding and care, but told the owner I didn't expect very good results as I considered there would be a continual seepage from the bowel which would prevent union of the wound.

I did not hear of this animal again until May, when I called at the place to castrate a colt. On inquiring about the mare, he pointed her out to me. She had just finished a day's work and was eating grass in the yard. I had him catch her and to my astonishment found she had made a perfect recovery, with scarcely a sign of her trouble and none of the old hernia.

I would like some practitioner to explain how the fistula healed over and if he still thinks the bowel is attached to the abdominal wall.

Stonewall, Man., Can. HARVEY R. MCEWEN.

Tuberculosis Spreads to Every Animal in Herd.

The extent to which bovine tuberculosis, if uncontrolled, runs its course through a herd of cattle, is shown in a recent report received by the United States Department of Agriculture from one of its field inspectors in Illinois. Every animal in a herd of grade Holsteins and Jerseys reacted to the tuberculin test. The herd consisted of 14 cows, two calves, and two bulls. Upon postmortem examination, six of the animals showed such extensive lesions that the entire carcass was condemned and destroyed. All of the other reactors likewise showed lesions, though not of such an extensive nature as to necessitate destruction of the carcass. The fact that every animal in the herd reacted and showed lesions makes the case one of the most striking ever recorded.

The danger to swine from tuberculous cattle was further demonstrated by the sale of hogs from this farm early in the year. The first lot of 21 hogs sold showed such extensive lesions of tuberculosis upon postmortem that the packing company refused to accept the remaining 50. These were subsequently sold to a local shipper and their identity and destination are not known.

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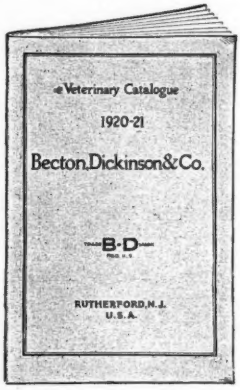

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Matters of Current Interest

A Successful Sanitary Meeting.

The United States Live Stock Sanitary Association held its twenty-fourth annual meeting in Chicago, November 29, 30 and December 1. The meeting was an unusually successful one in point of attendance and election of new members; the program was one to easily leave all satisfied with having attended.

The president of the association, Dr. S. F. Musselman of Kentucky, died during the year. Dr. E. M. Ranck of Mississippi and Dr. F. A. Bolser of Indiana, the first and second vice-presidents, respectively, were prevented by ill health from attending the meeting, which was presided over throughout by the third vice-president, Dr. W. F. Crewe, state veterinarian of North Dakota.

The address of welcome was delivered by Mr. Thomas E. Wilson, Chicago, president of Wilson & Company, and the response was given by Mr. A. J. Glover, Fort Atkinson, Wisconsin, editor of *Hoard's Dairyman*.

An hour during the first session was set aside as a memorial to departed members. This part of the meeting was in charge of Dr. J. I. Gibson, Illinois, chairman of the resolutions committee. The ceremony was a very impressive one. Eulogies were delivered for Dr. S. F. Musselman, Kentucky, president of the association; Dr. Joseph Hughes, Illinois; Dr. E. M. Wiggs, Texas; Dr. George McEvers, Illinois; Dr. J. F. Winchester, Massachusetts; Dr. S. E. Cosford, Nebraska, and Dr. Henry Beer of Illinois.

An entire session was devoted to each of the following subjects: Tuberculosis in cattle and swine, abortion disease and swine diseases. Committee reports and several papers were presented on each of these subjects. As many of these papers and reports will be published in these pages within the next few months, it is unnecessary to abstract them here.

In addition to the foregoing, comprehensive discussions of anthrax, scabies, special skin diseases and tick eradication were furnished by the program.

The officers elected for the ensuing year are: Dr. W. F. Crew, North Dakota, President; Dr. R. W. Hoggan, Utah, First Vice-President; Dr. J. H. McNeil, New Jersey, Second Vice-President; Dr. A. E. Bott, Illinois, Third Vice-President; Dr. W. K. Lewis, South Carolina, Fourth Vice President; Dr. P. Malcolm, Iowa, Fifth Vice-President; Dr. Theo. A. Burnett, Ohio, Secretary-Treasurer.

One hundred and eighty applicants were elected to membership.

Chicago. D. M. CAMPBELL, Sec'y.

Florida Association Revived.

The meeting of the Florida Veterinary Medical Association held at the Seminole Hotel, Jacksonville, Fla., November 22, 1920, was an impromptu meeting, called by Dr. Schofield of Miami. His call resulted in a representative gathering of Florida veterinarians and veterinarians in the service of the Department of Agriculture and of the State Live Stock Sanitary Board. It had the desired effect of bringing the Florida Veterinary Medical Association again into life.

The first question before the preliminary meeting was whether to continue the old organization or to reorganize?

Majority vote decided to continue the old organization and the president, Dr. Charles F. Dawson, called a regular meeting of the Florida Veterinary Medical Association to order.

Dr. A. L. Shealy of the University of Florida asked for the assistance and co-operation of the professional men throughout the state for his department at the university, stating that he already had the nucleus for a diagnostic laboratory, with a stock of small experimental animals, and was ready and glad to do diagnostic work on specimens sent to his department.

Dr. Dawson spoke of the need of a qualified veterinary bacteriologist.

Discussion brought out the dangers of abortion disease to the cattle of the state, both dairy and beef cattle. The advisability of the agglutination fixation test on cattle for importation into the state brought out statements that the S. L. S. S. B. had power to impose this test and require certification of test before cattle were allowed to enter the state. It is not known that any other state makes this requirement. There has been no law covering this case since 1886.

A motion was carried that the B. A. I. be asked to give protection against this disease

and to prohibit interstate movement without certificate of test.

A general discussion on a local condition known as "salt sick" showed this to be an aenemic condition brought about by many causes, notably intestinal parasites, especially uncinaria; chronic tick fever; poor pasturage or feed. Insanitary stabling, etc., could be successfully handled, when not too far advanced, by tonics containing iron, change of local conditions and change of pasture. The Federal government has appropriated $25,000 for the study of this condition.

In a discussion of the use of thymol versus chenopodium against internal parasites, thymol was favored. Chenopodium is considered safer for dogs than cattle.

A discussion of "black tongue" in dogs showed it to be a canine typhoid and that it would yield to intestinal antiseptics.

A motion was adopted that the president appoint a committee to draft such a veterinary practice act and to have power to appoint a representative at the coming legislative meeting and expend necessary funds to get such an act on our statute books. Drs. Schofield, Porter, Tanner, Link, Shuminiger, DeMilly and Houchin were appointed.

All B. A. I. men were invited to become honorary members of the association, with full privileges of membership, but no fees.

The following officers were elected for the ensuing year: Dr. Charles F. Dawson, president; Dr. Major Schofield, vice president; Dr. Fred W. Porter, secretary-treasurer.

Thirteen new members were admitted.

FRED W. PORTER, Sec.

Indiana Veterinary College Festivities.

The dance given at Hotel Severin, November 19, by the Junior class of the Indiana Veterinary College in honor of the faculty and students, proved to be a thoroughly enjoyable affair. Practically the entire student body and most of the faculty were present, and the evening passed pleasantly with dancing, singing of old songs, topped off with a buffet lunch between dances, of doughnuts and coffee made by the daughters of Dr. J. C. Vance, who holds the unique record of being in the same class in the college with his son, J. B. Vance. The committee in charge comprised Drs. W. P. Tague, J. C. Vance and J. S. Shirley.

Illinois Veterinarians Employ an Official on Full Time.

An important decision at the thirty-eighth annual meeting of the Illinois State Veterinary Medical Association, held in Chicago on December 2nd and 3rd, was to employ a veterinarian to give his full time and best efforts to the interests of the association and the profession in the state of Illinois.

It was decided to call the new official, the field secretary of the association. Dr. J. I. Gibson of Bloomington was selected for this office by the Executive Committee on Professional Welfare. He will be under the immediate direction of the Committee on Professional Welfare of the association. This committee is comprised of one member from each of the seven districts into which the state has been divided. The representative from the first district is Dr. E. L. Quitman, Chicago, chairman; second district, Dr. Roy E. Kluck, Forreston; third district, Dr. W. F. Brownlee, Kirkwood; fourth district, Dr. W. H. Welch, Lexington; fifth district, Dr. C. C. Hastings, Williamsville; sixth district, Dr. T. J. Foster, Monticello; seventh district, Dr. Robert Rives, East St. Louis.

Much time was spent at the meeting, discussing this and other business matters, so that the program rendered was short as compared with other meetings.

Fifty-five applicants were elected to membership, bringing the total membership of the association well over 600. Officers elected for the ensuing year were: Dr. T. J. Foster, Monticello, President; Dr. W. Lester Hollister, Avon, Vice-President; Dr. R. W. Story, Princeton, Member of Board of Censors.

The next meeting will be held in Peoria in July, 1921. D. M. CAMPBELL, Sec'y.

Chicago.

District Veterinary Meeting.

A series of eight district veterinary meetings have just been completed in Indiana in which practicing veterinarians were made more familiar with the intradermal tuberculin test and its application. The State Veterinary Department, Field Division, of the Bureau of Animal Industry, operating in the state, and Extension Department of Purdue University, each sent a representative to these meetings to discuss various phases of tuberculosis and demonstrate the intradermal test.

A large attendance and unusual interest were manifested at all of the meetings.

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BOOKS INSTRUMENTS

Veterinary Medical Association of New York City.

The regular monthly meeting of this association was held in the lecture room of the Carnegie Laboratory, New York City, Wednesday evening, November 3, President R. S. McKellar in the chair.

Dr. J. F. DeVine of Goshen, N. Y., gave a report of the recent tuberculosis conference held by the B. A. I. at Pennsylvania University, Philadelphia, Penn.

[A report of this conference was published in the December issue.—Editor.]

The next paper was by Dr. Wm. J. McKinney of Brooklyn on "Present Conditions in Ireland, Political, Industrial and Veterinary." Dr. McKinney, who is an entertainer of no mean ability, has recently returned from a trip to Ireland. The shamrock and the heather are so blended in his make-up that he can ridicule and abuse without giving offense. His report of his experiences was indeed interesting, but more interesting because McKinney was giving it. He stated that as soon as he landed on Erin's Isle he was required at once to show his passport and then instructed to get a permit if he wished to move about on Irish soil. He explained that Derry and Belfast, where he spent most of his time, are not good places at this time to have too much to say. Even the sons of Israel lost their emotion, and largely their power of speech while in these historic spots that St. Patrick once made safe for man and so undisturbing for woman, when he drove the serpents into the sea. Even our loquacious McKinney, during the evening, at times gave evidence of the extreme caution that had overcome the utter abandon that has so characterized his life. His expression of regret at the serious conflicts that are now disturbing this fertile little island were unfeigned, and the sympathy of his audience was with him when he expressed a hope that the unfortunate murdering of Irishmen by Irishmen would soon cease, never to be repeated. He was delighted to report that he had noted much improvement in veterinary science in Ireland during the past twenty years. He also reported having seen several interesting cases in horses, cattle, sheep and swine in company with veterinary practitioners

in Ireland, and stated that their treatment was both scientific and satisfactory.

Dr. Gannet gave a report of a case of dystocia in an Italian bitch. On examination the cervix was found to be dilated, and a dose of pitruitin was administered with no apparent results. After a delay of about sixteen hours another one and one-half dose was administered, which brought on pronounced labor pains, the bitch whelping nine pups.

J. F. DEVINE.

Minnesota State V. M. A. Meeting.

A splendid program has been planned for the twenty-fourth annual meeting of the Minnesota State Veterinary Medical Association, which will be held at Hotel Radisson, Minneapolis, and the Livestock Pavilion, University Farm, St. Paul, Jan. 13 and 14.

The program as arranged is, in part, as follows:

Anthrax with special reference to Prophylaxis, by Dr. A. Eichhorn, Pearl River, N. Y.

Municipal Inspection of Milk and Dairies as Practiced in Faribault, by Dr. L. Hay, Faribault, Minn.

Tuberculin Testing in Tuberculosis Eradication Work, by Dr. C. E. Cotton, St. Paul.

Address of Welcome, by Mr. A. E. Meyer, Mayor of Minneapolis. Response for the Association, by Dr. D. B. Palmer, So. St. Paul.

Nutrition in Its Relation to the Health of Domestic Animals (Illustrated), by Professor R. Adams Dutcher, U. of Minn.

Our Profession, by Dr. David S. White, Dean of Vet. Coll., Ohio St. Univ.

The Diagnosis and Treatment of Some of the More Important Diseases of the Digestive Tract of Cattle (Illustrated), by Dr. D. H. Udall, Ithaca, N. Y.

Diseases of the Udder, by Dr. T. H. Ferguson, Lake Geneva, Wis.

Undeveloped Resources in Veterinary Sanitation and Hygiene, by Dr. A. F. Schalk, Fargo, N. D.

A Discussion of Some of the More Important Diseases of Poultry, by Dr. W. A. Billings, University Farm, St. Paul.

A Discussion of Contagious Abortion and Demonstration of the Pathology and Treatment of Sterility, by Drs. C. P. Fitch and W. L. Boyd, University Farm, St. Paul, Minn.

A complete program for the entertainment of the visiting ladies is being planned.

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Connecticut V. M. A. Meeting.

The quarterly meeting of the Connecticut Veterinary Medical Association was held at Hotel Garde, New Haven, October 9. The program included the following:

"Hemorrhagic Septicemia of the Domesticated Animals," by Dr. Edwin Laitinen, Hartford.

"Essentials of Meat Inspection," Dr. Joseph Curry, Hartford.

"Reminisences of Service in the A. E. F. in France," Dr. I. R. Vail, New Haven.

GEORGE E. CORWIN, Sec.

Milk and Meat in the Food Supply.

Recent studies in nutrition have made clearer the importance of the mineral elements and the vitamines in the diet. In a recent report the committee on food and nutrition of the National Research Council discusses this matter, together with the question of the relative efficiency of the milk cow and the beef animal (in the production egg and evaporation prevented the material has a strong bacteriolytic power for the organism. The name oviserum has been given to the bacteriolytic substance. Experiments are cited which show that rabbits strongly immunized with oviserum are immune to anthrax virus, and that the serum of such animals has a much higher bacteriolytic power than normal serum.—Exp. Sta. eRc., U. S. Dept. of Agr.

Hippodrome Veterinarian Perishes in Fire.

Among five persons who perished in a recent apartment house fire in New York City was Dr. F. M. Potter, race horse owner, and veterinarian of the New York Hippodrome, noted for its skillful training of animals for theatricals and moving pictures, among them the horses for the race scenes in "Ben Hur," at its first showing in London.

Boiling Kills B. Botulinus.

Following the publicity early last year due to a number of deaths in various parts of the country from eating ripe olives containing Bacilli botulinus, which incidentally resulted in the loss of $4,500,000 to California olive growers, a wor of extermination upon the germ was begun. The result of the work done by the commission of scientists employed by the olive growers showed that boiling the olives for forty minutes at a temperature of 240 degrees killed the bacilli.

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Parts of Louisiana and Arkansas Requarantined Against Cattle Tick.

The Federal quarantine for cattle-fever tick was replaced on the parishes of Beauregard, Caldwell, Grant, Jackson, Red River, Union, Franklin, Pointe Coupee, and Washington in Louisiana, and Ouachita County, Ark., by order of the United States Department of Agriculture, effective September 15, 1920. The effect of the quarantine is that cattle can not be shipped interstate from these regions except under the regulations promulgated by the Secretary of Agriculture.

The first five parishes named were released from quarantine on December 1, 1918, and the remaining four parishes named and Ouachita County were released December 1, 1917, but the cattlemen and local authorities in these regions have failed to cooperate in the "mopping-up" work, and ticks have multiplied until they now constitute a menace to near-by parishes and counties that are tick free or that are eradicating ticks.

All other released regions in Louisiana and Arkansas are doing satisfactory "mopping-up" work, and it is believed that no other replacement of quarantine will be found necessary.

Dr. F. W. Godsall and family of Kewanee, Ill., have removed to a farm five miles from Kewanee.

New Wisconsin Association Formed.

On December 2d, some thirty veterinarians of the northeastern part of Wisconsin met together at the Hotel Sherman, Appleton, Wisconsin, where they banqueted and organized the Northeastern Wisconsin Veterinary Medical Association. It was pronounced by every man present to be one of the most interesting meetings for veterinarians ever held.

It is planned to make this one of the strongest associations of its kind in the state, and some subjects of interest to every member are being prepared by some of the most able men. The next meeting will be held at Green Bay, Wisconsin, date and place to be announced later. All veterinarians graduated from reputable veterinary colleges and licensed to practice by the State Board of Veterinary Examiners of this state are eligible to membership in the association. The membership fee is two dollars and application blanks may be obtained by writing Dr. G. W. Krubsack, Clintonville, Wisconsin.

It is the object of this association to promote goodfellowship among its members and

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ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed Secretaries are requested to furnish us data regarding their association after each meeting; otherwise the association will necessarily be dropped from the list. We trust the secretaries will co-operate with us in keeping before the numbers of their associations the date and place of the next meeting.

ASSOCIATION	PLACE	DATE	SECRETARY
American Vet. Med. Assn.	Colorado	August, 1921	N. S. Mayo, 4753 Ravenswood Ave., Chicago
British Columbia Vet. Assn			Kenneth Chester, 310 Warren Ave., New Westminister
Central Can. Vet. Assn	Ottawa, Ont	Jan. 19 or 20	A. B. Wickwire, 1031 Carling Ave., Ottawa, Can.
Central N. Y. Vet. Med. Assn.	Syracuse, N. Y.	Nov. 18	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Soc.	Chicago	Second Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Colorado Vet. Med. Assn.	1525 Curtis St., Denver, Colo.	Jan. 20	I. E. Newsom, Fort Collins, Colo.
Conestoga Vet. Club	Lancaster, Pa	Nov. 11	W. S. Fritz, Strasburg, Pa.
Connecticut V. M. Assn	New Haven, Conn.		G. E. Corwin, 99 Ann St., Hartford, Conn.
Eastern Iowa Vet. Assn.	Cedar Rapids, Ia.		J. Wolfe, Grand Mound, Ia.
Genesee Valley V. M. Assn.	Rochester, N. Y.	Second week in January	F. E. Cleaver, Avon, N. Y.
Georgia St. Vet. Assn.	Athens, Ga.		W. M. Howell, Valdosta, Ga.
Hudson Valley V. M. Assn.	Rhinebeck, N. Y.		W. H. Kelly, 233 Western Albany N. Y.
Illimo V. M. Assn.	Collinsville, Ill.		S. T. Finnegan.
Illinois S. V. M. Assn.	Chicago, Ill.	Dec. 2-3, 1920	D. M. Campbell, 9 So. Clinton St., Chicago
Indiana V. M. Assn	Indianapolis	Jan 11-13	E. T. Davis, Plainfield, Ind.
Iowa Vet. Assn.	Ames and Des Moines	Jan. 18-20	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Salina, Kans.	Jan. 4-5	W. J. Guilfoil, 221 N. 17th St., Kansas City, Kansas
Kentucky V. M. Assn	Paducah, Ky	February	C. W. Fisher
Louisiana Vet. Med. Assn.			E. P. Flower, Baton Rouge, La.
Maine V. M. Assn	Augusta, Me.	Second week in January	P. R. Baird, Waterville, Me.
Michigan S. M. M. Assn.	East Lansing, Mich.	Feb. 8-9	H. F. Palmer, Brooklyn, Mich.
Minnesota V. M. Assn.	Minneapolis	Jan. 13-14	C. P. Fitch, University Farm. St. Paul
Mississippi S. V. M. Assn.	Canton, Miss	Jan. 25-26	I. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City, Mo.	Feb. 8-9-10	R. F. Bourne, Ft. Collins, Colo.
Missouri Vet. Med. Assn.	St. Louis, Mo.	July	C. D. Folse, 4018 Harrison, Kansas City, Mo.
Natl. Assn. of B. A. I.	Meet with A. V. M. A.		S. J. Walkley, Milwaukee, Wis.
Nebraska S. V. M. Assn.	Grand Island	Dec. 15-16	C. J. Norden, Lincoln, Nebr.
Nevada St. Vet. Assn.	Reno, Nevada	January, 1921	S. Lockett, Reno, Nev.
New York S. V. M. Soc.	Buffalo, N. Y.		C. E. Hayden, Ithaca, N. Y.
Ohio St. Vet. Med. Assn.	Columbus, Ohio	Jan. 20-21	R. I. Bernath, Wauseon, Ohio.
Okla. St. Vet. Med. Assn.	Oklahoma City	Jan. 11-12	H. W. Ayers, Oklahoma City.
Oregon V. M. Soc.	Seattle, Wash.	August, 1921	B. T. Simms, Corvallis, Ore.
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	Jan. 25-26	R. M. Staley, 6716 N. 6th, Ardmore, Pa.
Philadelphia Vet. Club	Philadelphia	Fourth Tuesday of month	C. S. Rockwell, 5128 Chestnut, Philadelphia
Schuylkill Val. V. M. A.	Reading, Pa.	3rd Wed. in June	R. L. Burger, Hamburg, Pa.
Southern Cal. V. M. Assn.	Los Angeles	Third Wednesday of month	I. A. Dell, 16th & Orchard, Los Angeles
Southeastern Mich V. M. A.	Detroit, Mich.	Second Wednesday, January. April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Southeastern St. V. M. A.	Spartanburg, S. C.	Jan. 24-25	I. L. Handley, Atlanta, Ga.
Southern Tier V. M. A.	Elmira, N. Y.		R. R. Birch, Ithaca, N. Y.
Tennessee V. M. A.	Knoxville, Tenn.		I. M. Jones, Lewisburg
Utah S. V. M. Assn.			E. A. Bundy, Ogden
Vermont Vet. Med. Assn.	Montpelier, Vt.	February	Geo. Stephens, White River Jct.
Vet. Assn. of Alberta	Calgary, Alta.	September, 1921	T. E. LeClaire, 110 6th Ave. E. Calgary
V. M. Assn. of New York City	338 E. 26th St.	First Wednesday of month	I. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond, Va.	Jan. 13-14	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State College.	Second and Fourth Tuesday of Month	S. Worley, College Sta.
Wash. S. V. M. Assn	Seattle, Wash.	July, 1921	C. Cozier, Bellingham
Western N. Y. V. M. Assn.	Buffalo, N. Y.	Second week, December	F. F. Fehr, 243 S. Elmwood, Buffalo.
Western Pa. Vet. Club		Third Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn	Madison, Wis.	Jan. 19-20-21	W. A. Wolcott, Madison, Wis.
York Co. V. M. Soc.	York, Pa.	First Tuesday March, June. September, December	E. S. Bausticker, York, Pa.

further the interests of the graduate veterinarian, to elevate the standard of the profession and assist the State Veterinary Medical Association in the enactment of better laws and regulations relative to the practice of the veterinary profession.

Dr. William Madson, of Appleton, is the president of this wide-awake association.

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James Dorsey of Elgin, Ill., king of dealers in tuberculous cattle, has been pardoned by the parole board and has reopened his old offices.

Dorsey was convicted of using the mails to defraud in that he used them to further the sale of tuberculous cattle that were represented as being sound. He was sentenced to eight years in the federal penitentiary at Fort Leavenworth by Judge K. M. Landis of Chicago, and to pay a heavy fine. Dorsey fought the case in the courts for years and only began to serve his sentence about two years ago.

He is believed to have started foci of tuberculosis among cattle in nearly thirty states. The tuberculosis spread from diseased cattle shipped by Dorsey has probably already cost the cattle industry of the country millions of dollars, and the end is not yet.

Denver Wins Next A. V. M. A. Meeting.

The contest between veterinarians of Colorado Springs and of Denver for the privilege of entertaining the next A. V. M. A. meeting has been won by the latter, the executive board of the association, at its annual meeting in Chicago, December 1, having decided upon Denver, chiefly, it is said, because of its more satisfactory hotel accommodations.

The date of the meeting has been set for September 5 to 9, inclusive.

Brod Succeeds Boyd.

Dr. C. W. Boyd has resigned as Agent-in-Charge for the Bureau of Animal Industry at Pittsburgh, to engage in general practice.

Dr. William Brod has been selected to succeed Dr. Boyd and took charge December 15, the date the latter's resignation became effective. Dr. Brod has been connected with the Bureau for a number of years, most of which were spent in the Lancaster District, engaged in both stockyard and field work. The experience thus gained will serve him well in his new position.

Dr. O. E. York, who has been located at Dike, Ia., for the past nine years, has recently located at Belle Plaine, Ia., where a favorable opening has arisen.

Dr. W. F. Phalen of San Jose, Ill., has discontinued his practice there and moved to Jacksonville, Ill.

South Dakotans to Meet at Mitchell.

The program arranged for the semi-annual meeting of the South Dakota Veterinary Medical Association, to be held at Mitchell, January 12 and 13, indicates that matters of much interest will be discussed. Among the papers to be presented is one on "Undeveloped Resources in Veterinary Sanitation and Hygiene," by Dr. A. F. Schalk, Agricultural College, North Dakota, and at the evening session, which includes a banquet held jointly with the Live Stock Breeders' Association, speeches will be made by representative live stock men. On Thursday, "The Relation of the County Agent to the Veterinarian," will be discussed by W. F. Kumlein, County Agent Leader of Brookings, South Dakota.

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Experiment Station Veterinarian Dies.

Dr. Victor A. Norgaard, territorial veterinarian of Hawaii, died at his home in Honolulu November 15, 1920, as a result of a self-inflicted revolver shot through the heart. Despondency due to ill health and private affairs is believed to have occasioned Dr. Norgaard to take his life. He had been ailing for more than a year.

Dr. Norgaard was born in Copenhagen, Denmark, November 4, 1868. He had lived in Hawaii for fifteen years, and prior to that had been employed in the Pathology Division of the Bureau of Animal Industry at Washington.

He leaves a widow and a sister. His only child, Tyson Norgaard, committed suicide by shooting himself two years ago, on the eve of being graduated from Oahu College.

Dr. Conner has gone to El Centro, Calif., where we understand he plans to purchase a tract of irrigated land.

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Mulford Receives Recognition in Daily Press.

Views of the Mulford Laboratories at Glen Olden, Pa., occupied two pages of the rotogravure section of the Philadelphia *Public Ledger* for November 28, 1920.

The illustrations are most excellent reproductions and show a general view of the entire biological laboratories, consisting of more than two dozen buildings and many acres of grounds; a battery of tablet machines; a view of the analytical laboratory and chemical department; a giant percolator for producing fluid extracts; the removal of smallpox vaccine from a calf; a group of horses from which diphtheria antitoxin is being produced; filling of tetanus antitoxin syringes; a horse being injected for the production of tetanus antitoxin; the bleeding of horses for anti-pneumonia and anti-meningitis serum; close-up views of the drug and chemical laboratories; and of the executive offices; with a large half-tone of Milton Campbell, president of the company.

The views are a part of the series intended to better acquaint readers of the *Public Ledger* with the industries of Philadelphia.

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OKLAHOMA CITY, OKLAHOMA, FEBRUARY 14 to 19,
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DENVER, COLORADO, FEBRUARY 21 to 26.
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Post-Graduate Course.

The Indiana Veterinary College is to be congratulated upon the splendid post-graduate course which it has planned to give January 17-29. The faculty of the college will be assisted by specialists whose reputation speaks for itself. Among them are Drs. Edward A. Cahill, J. F. DeVine, T. H. Ferguson, A. T. Kinsley and L. A. Merillat. It is planned to make the course as up-to-date and intensive as possible, and at a moderate cost. It affords an exceptional opportunity to the proctitioner to brush up on matters he has become hazy upon since college days, and to familiarize himself with the latest up-to-the-minute methods.

Monroe Veterinary Infirmary Is Sold.

The Monroe La., Veterinary Infirmary, owned by Dr. Frank Collins, was sold recently to Dr. Charles Shoemaker, of Philadelphia, and Dr. George W. James, of Monroe, for $8,000. The infirmary was established twelve years ago by Dr. Collins and is regarded as one of the best in North Louisiana. Dr. Collins has gone to El Paso, where he will practice. He has been a member of the Louisiana state veterinary examiners for the past four years and for two years Ouachita parish live stock sanitary inspector.

Propose a Saddle Horse for Every Family.

Horseback riding is a more general sport now than it has been for many years past, since the days when the saddle horse was a necessity. Now he is used from choice by a great army of general riders who prefer him for exercise and diversion. There are more privately owned saddle horses and many more horses kept for hire today than before the advent of the motor car.

The Horse Association of America shows proof that good riders need not be born horsemen, but can be produced under the schooling of experienced riders and the horse itself. The association urges the use of saddle horses and ponies for children especially. Boarding stables and riding academies have reduced their prices this fall, following the drop in the cost of oats and hay.

Hamilton Bassett, the Billy Sunday of the West, says it means less work for the undertakers. "A child that is brought up with a horse or pony for a companion is a child that is early taught self-control and poise, not by precept and principle, but by experience," he says. "If there were a pony in every home, there would be fewer erotic children and less work for the juvenile courts, less drugs, less work for the undertakers.

"If there were a pony in every home, one million five hundred thousand children under ten years of age would not die in this great land of ours. Nor would one-third of the youth of the country between 18 and 20 years old be found to be physical rejects, as was true during the first draft of the army.

"Organize riding clubs for the young, instead of letting them spend their time riding around to undesirable places in autos with undesirable companions."

In the present revival of riding, equestrianism promises to be a very democratic institution. City parks afford mileage for an hour or two of riding, and the cost of a mount per hour is no more than that of a theater ticket. If equipment is not possessed, it, too, can be rented at small additional charge. Those who desire to eventually own their own horses can do so, though the scarcity of oncoming stock has forced the price higher than in previous years.

At summer or winter resorts, or on week-end visits to country homes, riding is one of the most popular diversions, and the young man or woman who is not proficient in the saddle on a spirited horse, suffers by comparison, for it is nowadays held that dancing, swimming, skating and horse-

(Continued on page 89)

(Continued from page 84)

back riding are social accomplishments which are integral parts of a well-rounded education.

The Horse Association of America, in furtherance of the general move into equestrianism, has issued a complete illustrated guide to riding in Chicago. Other cities will be organized in the same manner.

Southeastern States Plan Big Meeting.

Dr. David S. White, president of the American Veterinary Medical Association; Dr. L. A. Klein, Dean, University of Pennsylvania; Dr. A. L. Shealy, head veterinary department, University of Florida; Dr. R. L. Humphrey of the Southern Railway; Dr. O. H. Graham, former state veterinarian of North Carolina; Dr. B. F. Knapp, professor of poultry husbandry, in the North Carolina Agricultural College, and the names of other well known veterinarians are included in the preliminary announcement of contributors to the program of the annual meeting of the Southeastern States Veterinary Medical Association, to be held at Spartanburg, South Carolina, January 24th and 25th. Headquarters will be at the Cleveland Hotel.

Rooster Eggs.

One of the curiosities at the Poultry Show recently held at the Coliseum, Chicago, was a chicken freak, which crowed like a rooster, had a bright red comb on its head and a feathery tail that would provoke envy in an ostrich, yet each day for the past month, it is claimed, this rooster-hen laid an egg. The chicken, owned by a lady living in Wheaton, a Chicago suburb, was taken to the show by C. W. Mogee, a chicken fancier, and a Chicago lawyer.

Pinned Beneath Auto.

Dr. George Pugh of Lawton, Okla., was seriously injured recently when his auto turned turtle while he was on his way to make a call. He was found pinned beneath the car, where he had lain unconscious for several hours. He was hurried to the hospital, where it was found that he was badly bruised and had possibly sustained serious internal injuries.

Anti-Tuberculosis Vaccine Discovered.

Drs. Calmette and Guerin of the Pasteur Institute, Paris, have made a preliminary announcement of an anti-tuberculosis vaccine for cattle. The vaccine is administered intravenously, and appears to confer immunity.

Further investigation in the matter is being made and plans are also being made to adapt the vaccine for use on humans.

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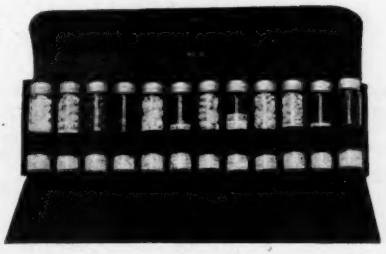

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Index of Scientific Literature.

An international conference of delegates from important scientific academies to consider the future of the International Catalogue of Scientific Literature has just been held in London at the invitation of the Royal Society. Representatives were present from fourteen countries. The American delegates were Dr. R. M. Yerkes, Prof. L. E. Dickson, Prof. L. P. Eisenhart, G. C. Gunnell, and Dr. S. I. Franz, representing the National Academy of Sciences, the National Research Council, and the Smithsonian Institution.

Up to the time of the war, more than thirty countries were joined in undertaking the indexing and publishing the index of the scientific literature of the world. Fourteen annual issues, each of seventeen volumes, have been published covering the literature from 1901 to 1914. The results of the war, together with the much increased cost of printing and publishing, have interrupted the undertaking and no index of scientific literature published since 1914 has been issued. The conference decided that even though a change may be made in the future in the method of indexing and publishing the index, as has often been suggested, it is imperatively necessary to continue the present method until the scientific

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literature published up to the end of 1915, and possibly, also, that up to the end of 1920, has been catalogued.

Highly Commendable.

Your Journal, I must say, is highly commendable to the profession—nothing better—concise and all interesting and to the point.—J. D. A., Arizona.

I have read your Journal ever since its inception as the bulletin of the Missouri Valley Medical Association, and I enjoy it very much. It is very interesting to read of other practitioner's experiences and methods of treatment, and of course we are all looking for all the valuable information we can get. Congratulations upon your really good and useful publication.—R. W. B., Massachusetts.

Dr. V. C. Fretz, formerly connected with the United States Department of Agriculture and Animal Industry, but more recently of the Indiana State Veterinary Department, has taken over the practice of the late Dr. O. C. Whitestine at Huntington, Ind. The doctors were close friends and, we are told, had been contemplating a partnership prior to the death of Dr. Whitestine.

Veterinarians of Macoupin County, Ill., perfected the organization of a county association at a meeting recently held at Carlinville. Dr. A. Fletcher of Virden was chosen as president and Dr. W. E. Schlankser of Carlinville secretary.

Lieutenant Elmer Rhoads, who has been stationed at Ft. Bliss, Texas, in the Remount Department of the United States Cavalry, has located at Bloomington, Ill.

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Land Values Dependent on Cheap Power.

W. S. Dunham, who owns and operates a farm of approximately 2,000 acres in DuPage County, Ill., was recently interviewed respecting land values in the corn belt. He said in substance:

The high prices at which farm lands have been sold and are now held are based upon high prices for the products of the farm, large yields and low cost of production. These combined have made it possible for farm owners to realize a reasonable rate of return on land at high values. How long a world-wide shortage of farm products and consequent high prices may prevail, I will not undertake to predict. Large yields of farm crops can only be secured, however, where due precaution is taken to conserve soil fertility by the thorough utilization of farm yard manures and such other fertiliers as may profitably be used.

Low cost of production has, of course, been our greatest advantage. It is due to the utilization of labor-saving farm machinery and cheap power. Whenever cheap power fails, costs of production will inevitably rise, and this is our greatest danger today.

The most reliable, efficient and economical power farmers have ever had is furnished by good horses and mules. This is clearly recognized and conceded by all experienced farmers even by those who have in recent years utilized tractors to some extent in some farm operations. We are today confronted with the fact that there is an actual shortage of young work horses and mules suitable for replenishing our power requirements in the future. Most serious of all is the fact that the machinery for horses and mule production has been largely dissipated. Good mares have been permitted to go unbred so long that they are now barren. Others have been sold for non-agricultural work and are thus removed from fields of future horse production. Stallions have been so little patronized for the last four years that thousands of them have been castrated, and there is today the greatest shortage of good sires suitable for begetting high-class work animals that we have ever known in this country.

The trouble seems to be that every farmer wants to "let George do it." He realizes that horses are indispensable on the farm and furnish the cheapest source of motive power available, but the high prices for meat animals and grain and the inclination to seize on those lines which promise the greatest immediate returns, have caused hundreds of thousands of farmers who

(Continued on page 97)

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formerly bred and reared their own power replacements, to discontinue their horse-breeding operations, with the idea that when the time came they would buy replacements elsewhere. They forgot that everyone else operating under the same general farm conditions had the same idea.

There is no more vital nor more fundamental problem before American farmers today than a continued abundant supply of cheap motive power on the farm. Without it, production costs will rise, and acre yields reduce because of the lack of manure horses employed on farms have furnished. Unless the farmers of this country protect their own interests by making arrangements for the production of their own power on their own farms by breeding good horses and mules for which they are raising their own food at cost, the two factors, combined with falling prices for farm products, inevitable whenever the rest of the world gets down to normal production of farm crops, will certainly reduce the returns from farm operations with a consequent reduction in land values.

The far-sighted farmer is already arranging to produce his own power.

WAYNE DINSMORE,
Secretary Horse Association of America.

Looks Forward to Its Arrival.

I have been a reader of your journal since my graduation in 1916, and consider it a most valuable publication. I look forward to its arrival in the mails from month to month.—P. G. M., Wash.

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Post-Graduate Course at Pullman.

The College of Veterinary Science of the State College of Washington, Pullman, Wash., is again offering a post-graduate course for veterinarians for the four-day period from January 10 to 14, under the auspices of the College of Veterinary Science, State College of Washington, the Oregon and Washington Veterinary Medical Associations. The tentative program comprises a fairly wide variety of subjects of particular interest to practicing veterinarians. The faculty of the college will be assisted by men of national repute, including Dr. A. T. Kinsley, of Kansas City; Dr. W. H. Lytle, state veterinarian of Oregon; Dr. B. T. Simms, professor of veterinary medicine, Oregon Agricultural College, Corvallis, and Dr. W. T. Johnson, Experiment Station, Veterinary State College of Washington, Puyallup.

These courses are conducted yearly, and have received splendid support from the veterinarians of the West.

Stinkweed.

Dr. L. L. Lindsey of Graettinger, Iowa, writes as follows regarding stinkweed (*Polanisia trachysperma*): "I am sending a specimen of a plant to ascertain your opinion regarding its value. It grows in our gravel pits, and dry weather does not affect it at all."

Reply: The plant produces a very disagreeable odor, but I do not recall any references to poisoning from it. Cattle and horses will not eat it. Cattle carefully avoid the western stinkweed or Rocky Mountain bee plant (*Cleome integrifolia*). These plants contain pungent principles similar to mustard, perhaps a little more pronounced, and cattle do not relish the pungency. One of the related plants, caper, is used in pickles.—L. H. P.

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FOR SALE—Veterinary practice in dairy section of New England, worth $3,000 yearly. Also drugs, instruments and auto if desired. French-speaking veterinarian can increase the yearly income. Address 562, care VETERINARY MEDICINE.

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POSITION WANTED—Graduate Veterinarian (McKillip Vet. College), age 37, American. Consider any kind of position, also partnership. Registered in two states. Practiced seven years; veterinary to state institution three years. Experienced in meat inspection. Experienced in live stock inspection. Address, 2609, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

WANTED—By graduate veterinarian, position with college, experimental station, commercial house, or state or city food inspection. Experience in teaching, state work, laboratory, manufacture of hog cholera serum; also proprietary veterinary remedies. Permanent connection desired. Pleasing personality and address. Married; age 38. Excellent health; good references. Address No. 563, VETERINARY MEDICINE.

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This is a timely little work on a subject of great importance to every practitioner having any cattle practice whatsoever.

Few parts of the country are not suffering to a greater or less extent from sterility and contagious abortion in cattle, and these ailments are increasing in prevalence and importance every year. This is the only work on the subject for English-speaking veterinarians and one which every veterinarian concerned in cattle practice should have.

Albrechtsen, whose work has been widely recognized in Europe, is able to demonstrate the curability of the general sterility case; and with the elimination of this phase of the trouble, the damages done by infectious abortion would be trifling compared with what they are now.

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"THE PIONEERS"

Dr. H. L. Gregory, Columbia, S. C., was found guilty by the Federal Court of violating the Harrison anti-narcotic law, and was fined $1,000 and sentenced to serve one year and a day in the penitentiary. Gregory was charged with selling morphine and cocaine. The jury brought in a verdict of guilty on the count of selling morphine.

G. M. Durkee, Redding, Cal., was recently fined $25 for practicing veterinary medicine without a state license, following charges filed against him by Dr. J. P. Iverson, chief of the Division of Animal Industry of California.

Dr. Orville G. Whitestine of Huntington, Ind., was found dead at his home, October 22, death being due to chronic heart trouble. Dr. Whitestine was 51 years old, and was survived by his widow.

Chester White, adjudged the grand champion boar at the Iowa State Fair this year, owned by L. L. Lyle, Webster City, Ia., and valued at $10,000, dropped dead recently while being exercised.

Former State Veterinarian Dr. A. S. Cooley of Cleveland, O., was elected as a member of the lower house in the Ohio Legislature, during the recent election.

Dr. L. G. Chalcroft, who was formerly located at Albion, Ill., has removed to Warrensburg, where we are informed he is enjoying a good practice.

Dr. Clyde C. Brown of Peoria, Ill., died recently at the age of 41. He is survived by his widow.

Dr. M. Johnson, formerly of Heppner, Ore., has taken over the practice of Dr. J. Koch at Downey, Cal.

Dr. Charles A. Dohan of Darling, Pa., died November 16, 1920. No particulars available.

Wisconsin Veterinarians to Meet at Madison.

Dr. W. A. Wolcott, secretary of the Wisconsin Veterinary Medical Association, informs us that the biggest and best state association in the United States is to meet at Madison, Wis., January 19, 20 and 21, 1921. If past meetings are any criterion we predict an exceptionally interesting meeting at Madison. Many prominent men will be present, and a number of subjects will be discussed. A general invitation is extended to veterinarians from surrounding states to attend.

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